# AUKE CREEK WEIR
# 2005 ANNUAL REPORT

Operations, Fish Counts, and Historical Summaries

by

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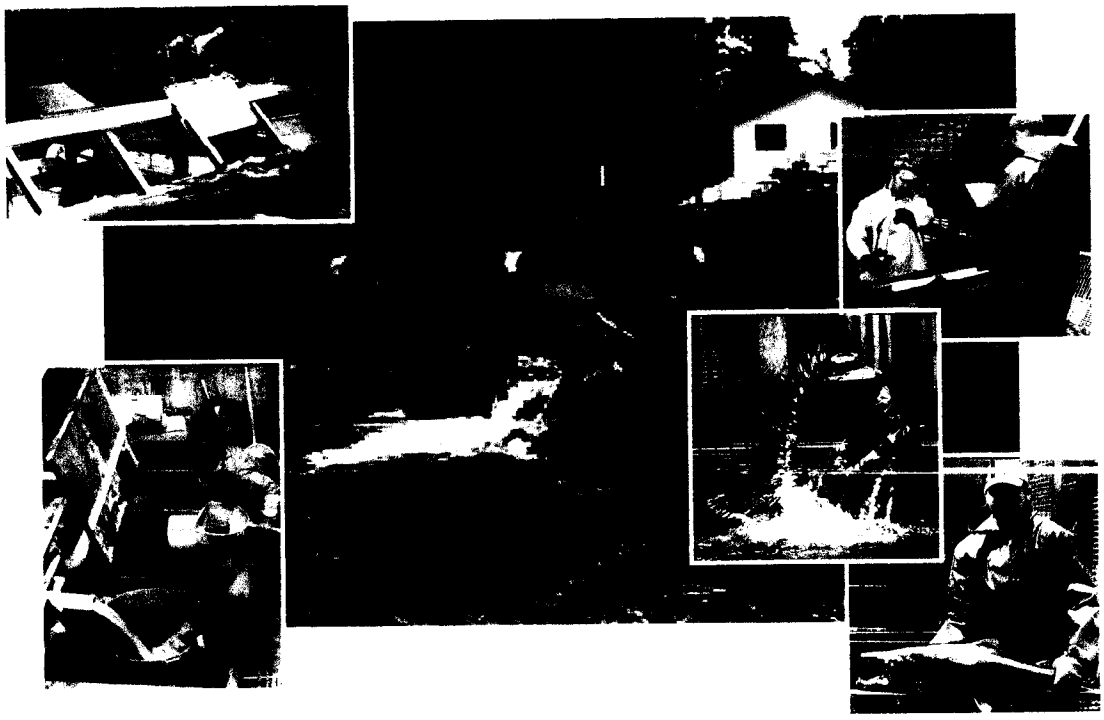
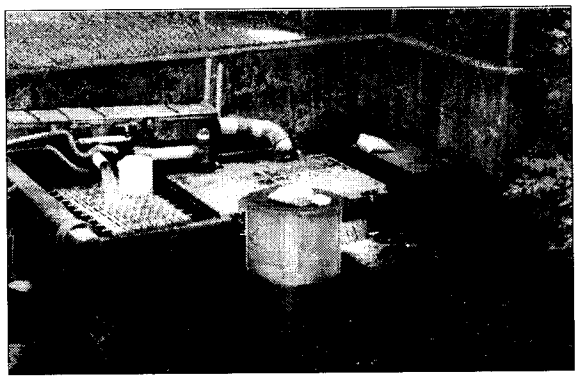
National Marine Fisheries Service

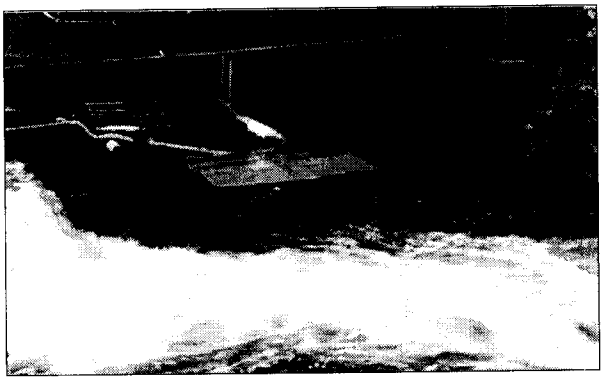


This report may be cited in the following manner:
Taylor, S.G. 2006. Auke Creek Weir 2005 Annual Report, Operations, Fish Counts, and Historical Summaries. Unpublished Report 24 p. National Marine Fisheries Service, Auke Bay Laboratory, 11305 Glacier Highway, Juneau, Alaska 99801-8626.

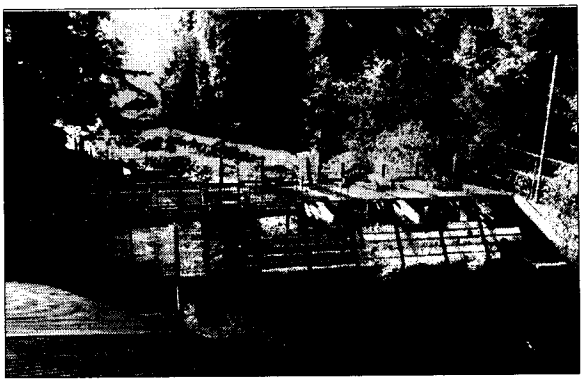
# Table of Contents

How to tell when there is a flood at Auke Creek





Green holding tank is under water during downstream weir period: depth at green box > 3 ft.



Water goes over second row of panels on adult weir: depth in adult trap > 8 ft.

## Auke Creek Weir 2005 Report

The Auke Lake system has endemic populations of pink, chum, sockeye and coho salmon, and supports populations of Dolly Varden char and cutthroat and steelhead trout. The National Marine Fisheries Service (NMFS), and its' predecessor agency, U.S. Bureau of Commercial Fisheries, began salmon research at Auke Creek, near Juneau, Alaska, in 1961. There are emigrant and immigrant counts of several species over the last four decades (Appendices 1 and 2). Pink salmon fry populations in Auke Creek were estimated annually, 1972-79, and counted at Auke Creek weir since 1980. Fyke nets were used to estimate sockeye salmon smolts leaving Auke Lake, and estimates are available for some years between 1961 and 1979. Total smolt counts are available since 1980. Chum salmon fry were counted annually since 1985. Coho salmon smolt estimates were made in 1976, 1977, and 1979, and the total coho smolt emigration was counted since 1980. Dolly Varden char and cutthroat trout were counted in 1970, and since 1980. Steelhead emigrants were counted since 1990. Weir counts of sockeye salmon adults at Auke Creek began in 1963; pink and chum salmon were counted 1967-68, and all salmon were counted since 1971. Chinook salmon returned to Auke Creek since 1987 as a result of releases of juveniles from other hatcheries. Immigrant Dolly Varden and cutthroat and steelhead trout were counted since 1997.

Auke Creek is the site of many research projects on wild and hatchery salmonids. The present weir at Auke Creek was constructed in 1980, and provided the capability to capture all emigrant and immigrant salmonids. Annual operation and maintenance costs associated with Auke Creek Research Station are provided by NMFS through the salmon research program of Auke Bay Laboratory. Projects at Auke Creek between 1971 and 1983 operated under several cooperative agreements. An interagency cooperative agreement relating to Auke Creek weir was established in 1983 between the NMFS, University of Alaska-Fairbanks (UAF), and Alaska Department of Fish and Game (ADF&G). The agreement provided the authority to jointly fund a full-time person to assist with the operation of the fish counting weir at Auke Creek. The primary objective is to operate the weir on a daily basis and maintain the long-term data collections on migrant salmonids. Auke Creek weir usually operates from early March through late October. A report of fish counts from daily weir operation, and other information related to salmonid research involving the facilities at the weir is prepared each year. The annual fish count data are available in the Auke Creek data file at the NMFS Auke Bay Laboratory. Data collected on specific projects outside the scope of the cooperative agreement are usually not included in the annual report. Those data may be available from project investigators or their respective agencies. No fish were released from Auke Creek hatchery in 2005. All chinook and most chum salmon adults captured in 2005 were strays from other hatcheries. Three pink/chum adult hybrids were captured at Auke Creek weir in 2005.

The emigration weir at Auke Creek was installed February 28 and operated through June 30. All pink, sockeye, chum, and coho salmon, Dolly Varden, and cutthroat and steelhead trout leaving Auke Creek were captured in the weir traps. All fish were counted and released. The first emigrants, pink salmon fry, were captured March 1. Coho salmon smolts and cutthroat trout were marked and tagged during the downstream migration.

The immigration weir was installed June 30 to capture salmonids entering Auke Creek. The weir was modified to capture small immigrants, specifically cutthroat and steelhead trout, Dolly Varden, chinook salmon mini-jacks, and coho salmon juveniles. Before 1997, small fish passed through the adult weir panels and were not counted. Aluminum plates, 0.3 x 46 x 91 cm, with 1.3 x 10 cm horizontal slots were placed on the bottom half of the lowest weir panels to prevent passage of small fish. Two perforated aluminum trout traps, 2 x 3 x 1 m, were attached to the upstream side of the weir to capture small fish. The main weir and trout traps were lined with heavy plastic mesh, 6mm openings, to prevent passage of small fish.

Salmon adults cannot enter the trout traps because of the small entrance openings. In accordance with the annual operation plan, various personnel assisted with the counting and processing of fish at the weir. Weir operations ended October 28, and the weir was removed from operation.

Water temperature in Auke Creek was measured daily at the weir site, and temperatures were above average from January through August, and near average for the rest of the year (Figure 1, Appendix 3). Overall, 2005 was tied with 2004 as the second warmest water-year on record for Auke Creek; only 1998 was warmer (Figure 2). Stream flows were moderate during March and April, and decreased steadily throughout May and June. Flow from Auke Lake was extremely low in July and early August. Water temperatures at Auke Creek were >15°C from May 8 through August 23. Immigrations were delayed because of low stream flow and high water temperatures. There were no floods during the time the weir was operating this year.

Ice conditions on Auke Lake were within the range observed in other years. Auke Lake was about 95% frozen by late December 2004, and frozen for about 2 weeks from late November through early December 2005. Auke Lake was ice free on April 11, 2005. The average ice free date for Auke Lake is April 18 (Figure 3, Appendix 4).

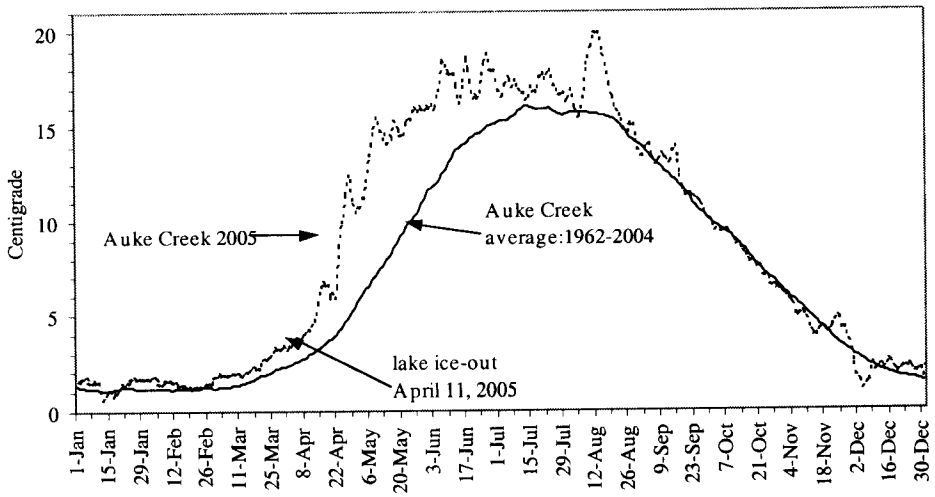



Figure 1. The 2005 and average, 1962-2004, daily water temperatures of Auke Creek, and date of ice out in 2005.

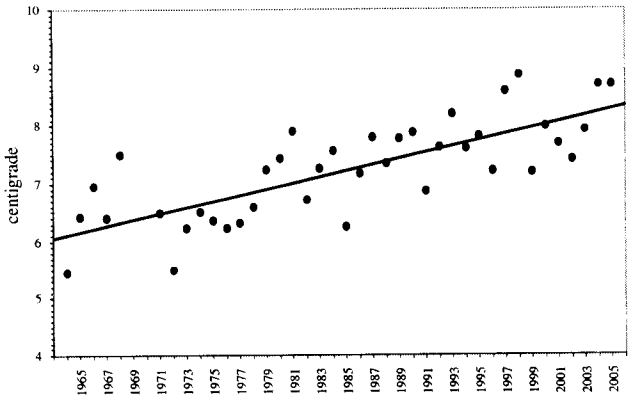



Figure 2. Average annual temperature of Auke Creek, and the trend line over all years.

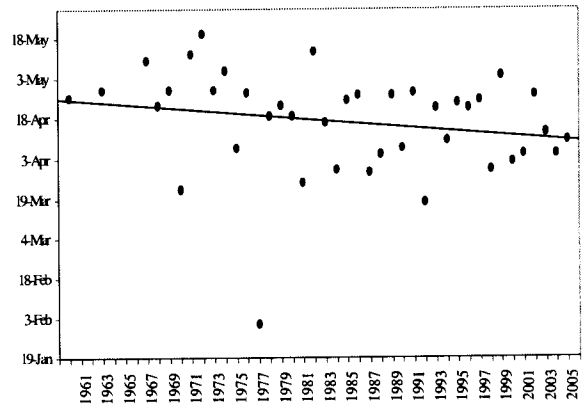



Figure 3. Dates of ice-out on Auke Lake, and trend line over all years.

## Pink Salmon

Pink salmon spawn throughout the Auke Lake system, mainly in Auke Creek and tributaries to Auke Lake and in the intertidal area downstream from the weir site. There are distinct runs of pink salmon in August and September, referred to as the early and late runs, in both the even and odd numbered years. Before 1963, Auke Creek upstream from the weir was mainly small rock and boulder substrate on bedrock, and there was probably limited area for spawning salmon. Spawning channels built in the upper reach of Auke Creek in 1963 provided about 1,000 $m^2$ of spawning area. The original streambed substrate was removed down to bedrock during channel construction. The channels were created using stacks of 20x20cm timbers bolted together to form dams about 1 m high. The timbers were buttressed from the downstream side by concrete-filled sandbags. Each dam was filled with washed rock, mostly 5-10cm cobbles, purchased locally. Since 1963, floods washed large amounts of the cobbles out of the channels, and the streambed is reverting to bedrock and small boulder substrate. The streambed downstream from the weir is intertidal, and is mainly boulders, broken shale, and smaller gravel on bedrock. There are no complete counts of pink salmon at Auke Creek before the channels were built. Before the first return of hatchery pink salmon in 1973 the average adult run was about 2,600 fish.

Pink salmon fry populations were estimated in Auke Creek from 1972-80 by hydraulic censuses in the freshwater and intertidal areas. The production of pink salmon fry from the freshwater area ranged between 11,000 and 277,000 fry (Figure 4). Weir counts of fry leaving the freshwater area began in 1980, and the hydraulic censuses stopped. The accuracy of hydraulic censuses of fry populations in Auke Creek is not known. The cobble and boulder substrate in Auke Creek makes it difficult to efficiently operate hydraulic sampling equipment, and the confidence intervals of fry estimates are large. The hydraulic censuses showed the average estimates and confidence intervals of freshwater and intertidal populations were 137,000 ± 60,000, and 63,000 ± 29,000.

In 2005, a total of 87,928 pink salmon fry were counted during the migration from the freshwater area, about 28,000 fewer than average (Table 1). The average fry emigration for all years is 115,885. The 2005 migration was above average daily numbers during the second and third weeks of April, after which the numbers decreased rapidly (Figure 5). A total of 5,967 fry emigrated in March, most fry emigrated in April, 81,825 fish, and 136 left in May (Appendix 5). No wild fry were marked or tagged in 2005. No hatchery fish were produced.

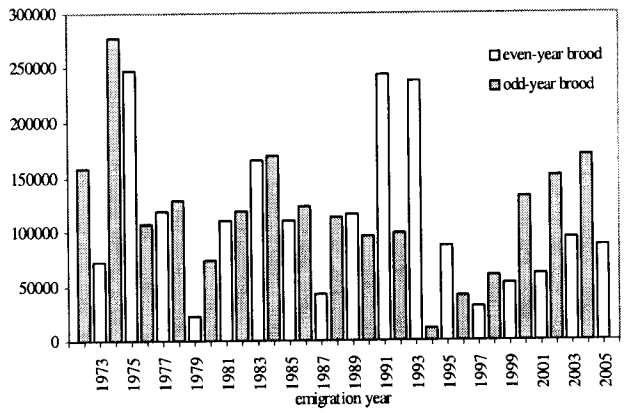



Figure 4. Number of pink salmon fry, even- and odd-year broods, at Auke Creek.

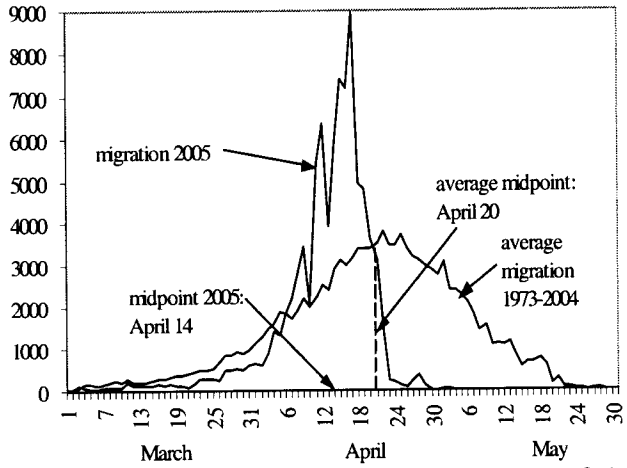



Figure 5. The 2005 and 1973-2004 average migration of pink salmon fry at Auke Creek.

There is a trend over the last three decades for Auke Creek pink salmon fry to migrate earlier in the year, and the 2005 emigration followed that trend (Figure 6). The median date of the 2005 emigration was April 14. The average for all years is April 20; the earliest emigration was April 2, 1998 and the latest May 7, 1982.

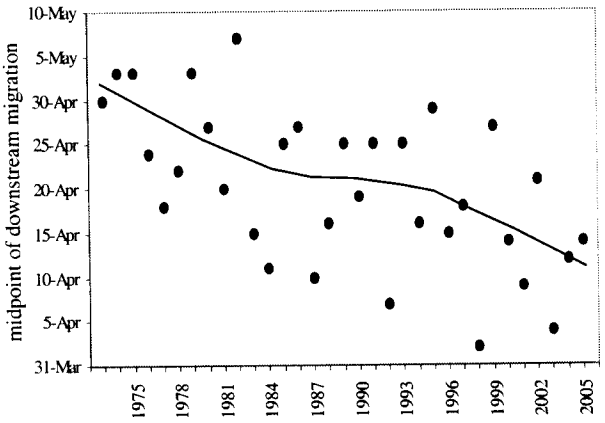



Figure 6. Midpoint dates of pink salmon fry migrations at Auke Creek; trend depicted by local weighted regression

Pink salmon adults were counted at Auke Creek in 1967 and 1968, and since 1971, and runs of wild pink salmon adults at Auke Creek ranged between 334 and 28,000 (Figure 7). In 2005, 10,010 pink salmon adults were captured at Auke Creek weir. The 2005 run was above the average for Auke Creek wild fish (Table 1). In 2005 the midpoint of pink salmon immigration was August 21, tied with 2002 as the second earliest on record. Pre-spawning mortality was high in Auke Creek in 2005. About 50% of the females recovered as carcasses at the weir had died before spawning.

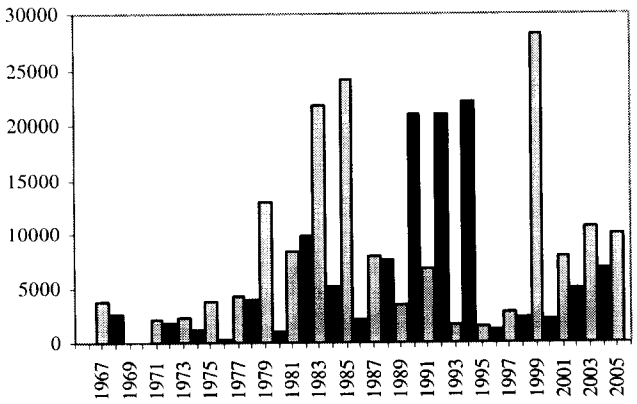



Figure 7. Number of wild pink salmon adults at Auke Creek, 1967-68 and 1971-2005.

In 2005 the pink salmon adult migration began in late July and ended in early September. A total of 522 pink salmon returned in July, 8,350 in August, and 1,138 in September. About 56% the total run entered Auke Creek between August 19 and September 1 (Appendix 6). Adult migration timing was effected by rain and water temperatures in August (Figure 8). Based on sex ratio and general appearance of the fish, August 27 was considered the end of the early run, although there was not much certainty in that determination. The early run was 7,713 fish (4,011 males and 3,702 females) and the late run 2,297 fish (1,164 males and 1,133 females). Overall, the migration timing of pink salmon adults at Auke Creek has shifted earlier, and the late September component of the run is almost gone (Figure 8). From 1967-1981, it was not unusual to have hundreds of fish enter the creek daily through late September, and the average immigration midpoint was September 7. Since 1982 the average midpoint is August 27 (Figure 9).

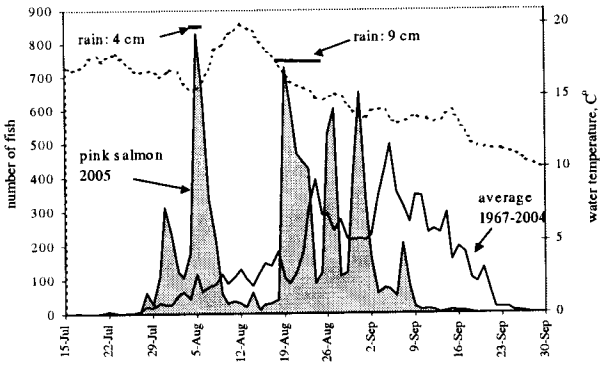



Figure 8. The 2005 and average migration of pink salmon adults, and water temperature(dashed line) at Auke Creek. Two periods of rain are depicted by bars.

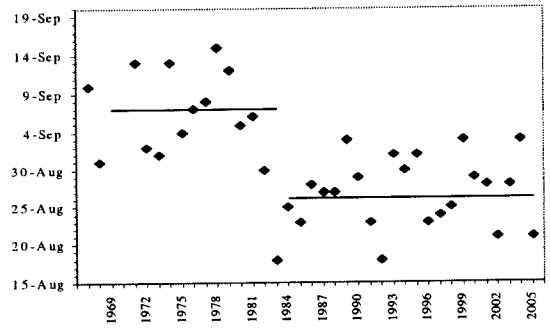



Figure 9. Median immigration dates of pink salmon at Auke Creek. The lines are the averages of the periods.

Table 1. Number of wild and hatchery pink salmon fry and adults at Auke Creek.

| | pink salmon fry | | | pink salmon adults | | |
|---|---|---|---|---|---|---|
| Year | wild | hatchery | total | wild | hatchery | total |
| 1967 | | | | 3,761 | | 3,761 |
| 1968 | | | | 2,638 | | 2,638 |
| 1969 | | | | | | |
| 1970 | | | | | | |
| 1971 | | | | 2,091 | | 2,091 |
| 1972 | 157,189 | 186,674 | 343,863 | 1,768 | | 1,768 |
| 1973 | 73,900 | 493,769 | 567,669 | 2,262 | 2,686 | 4,948 |
| 1974 | 277,624 | 1,014,338 | 1,291,962 | 1,139 | 5,121 | 6,260 |
| 1975 | 247,091 | 1,075,870 | 1,322,961 | 3,806 | 10,455 | 14,261 |
| 1976 | 108,195 | 259,837 | 368,032 | 334 | 2,191 | 2,525 |
| 1977 | 119,442 | 498,161 | 617,603 | 4,328 | 11,520 | 15,848 |
| 1978 | 129,714 | 264,216 | 393,930 | 3,972 | 14,438 | 18,410 |
| 1979 | 23,270 | 499,813 | 523,083 | 12,922 | 6,081 | 19,003 |
| 1980 | 74,047 | 177,619 | 251,666 | 924 | 19,264 | 20,188 |
| 1981 | 110,552 | 175,827 | 286,379 | 8,432 | 6,018 | 14,450 |
| 1982 | 119,548 | 134,843 | 254,391 | 9,831 | 827 | 10,658 |
| 1983 | 164,784 | 39,777 | 204,561 | 21,855 | 2,972 | 24,827 |
| 1984 | 169,552 | 98,930 | 268,482 | 5,115 | 156 | 5,271 |
| 1985 | 110,001 | 101,296 | 211,297 | 24,124 | 2,193 | 26,317 |
| 1986 | 123,887 | 5,165 | 129,052 | 2,089 | 216 | 2,305 |
| 1987 | 43,502 | 16,562 | 60,064 | 7,902 | 12 | 7,914 |
| 1988 | 113,061 | 66,376 | 179,437 | 7,574 | 566 | 8,140 |
| 1989 | 116,870 | 38,976 | 155,846 | 3,461 | 1,555 | 5,016 |
| 1990 | 96,651 | 80,014 | 176,665 | 20,983 | 823 | 21,806 |
| 1991 | 242,772 | 64,137 | 306,909 | 6,653 | 225 | 6,878 |
| 1992 | 98,447 | 29,086 | 127,533 | 20,972 | 1,129 | 22,101 |
| 1993 | 237,073 | 22,879 | 259,952 | 1,688 | 8 | 1,696 |
| 1994 | 11,603 | | 11,603 | 22,167 | 366 | 22,533 |
| 1995 | 88,197 | 774,589 | 862,786 | 1,548 | | 1,548 |
| 1996 | 41,359 | | 41,359 | 1,155 | 3,219 | 4,374 |
| 1997 | 31,092 | 40,074 | 71,166 | 2,774 | | 2,774 |
| 1998 | 60,785 | 39,834 | 100,619 | 2,267 | 612 | 2,879 |
| 1999 | 53,533 | 40,000 | 93,533 | 28,127 | 1,970 | 30,097 |
| 2000 | 132,075 | 40,000 | 172,075 | 2,181 | 310 | 2,491 |
| 2001 | 61,504 | | 61,504 | 7,857 | 466 | 8,323 |
| 2002 | 150,149 | | 150,149 | 4,928 | | 4,928 |
| 2003 | 95,132 | | 95,132 | 10,580 | | 10,580 |
| 2004 | 169,568 | | 169,568 | 6,802 | | 6,802 |
| 2005 | 87,928 | | 87,928 | 10,010 | | 10,010 |
| mean | 115,885 | 232,543 | 306,995 | 7,595 | 3,533 | 10,173 |

## Sockeye Salmon

Auke Lake sockeye salmon spawn in the larger tributaries and on submerged gravel beds in the lake. The production of sockeye smolts from Auke Lake was first estimated in 1961 at 90,816, the highest on record. From 1964 through 1979, wild smolt estimates ranged from 8,862 to 65,242. However, the pre-1980 smolt estimates lack continuity and some are known to be incomplete. Based on the pre-1980 adult counts, it is obvious there has been a significant decrease in the number of smolts since the 1960s and early 1970s. Since 1980, the entire smolt population was counted at Auke Creek weir, and the number of wild smolts ranged from 1,619 to 33,616. Hatchery-reared sockeye juveniles stocked in Auke Lake in 1974-1975 and 1987-1989 contributed to the smolt emigrations in 1975-77 and 1988-91. Sockeye enhancement from 1988-1992 included the release of age-zero (under-yearling) smolts reared in the hatchery at Auke Creek and net pens in Auke Bay.

In 2005, a total of 8,513 sockeye smolts emigrated from Auke Lake. The average number of wild smolts produced in Auke Lake, 1980-2005, is 16,926 (Figure 10, Table 2).

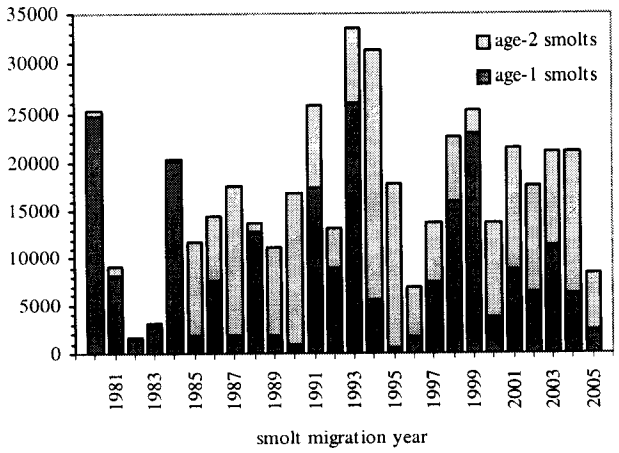



Figure 10. Number of sockeye salmon smolts, by age class, leaving Auke Lake, 1980-2005.

Sockeye salmon emigration began in late April, 23 smolts, 7,495 emigrated in May, and 995 emigrated in June (Appendix 5). The overall emigration midpoint was May 12, the second earliest on record. The average is May 23 (Figure 11). Age-2 smolts migrated earlier than the age-1's, median dates May 11 and May 29 (Figure 12).

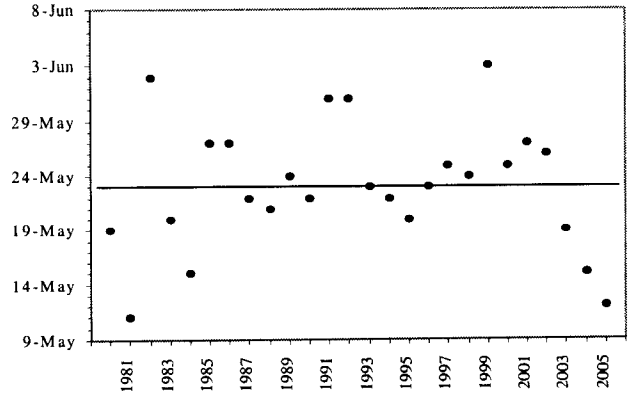



Figure 11. Median emigration dates of sockeye salmon smolts leaving Auke Lake. The line is the average.

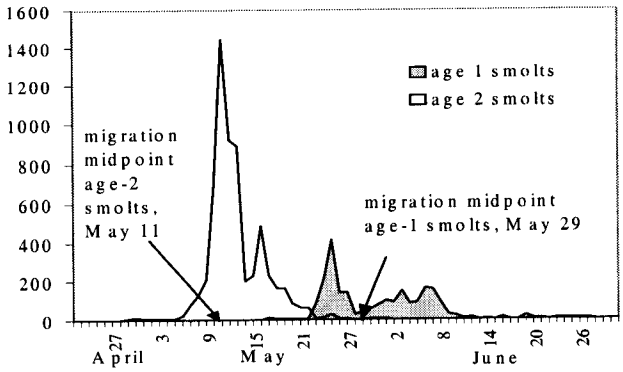



Figure 12. Daily migration of sockeye salmon smolts at Auke Creek, 2005. Arrows depict the midpoint dates for each age class.

Scale analysis revealed that 28% of the 2005 smolts, 2,343 fish, were age-1 (2003 brood), and 72%, 6,170 fish, age-2 (2002 brood). The 2002 brood has completed the freshwater phase of its' life history, and produced a total of 12,461 smolts, nearly 5,000 fish fewer than the 25-year average of 17,431 (Figure 13). The 2003 brood has produced only age-1 smolts; the age-2 smolts will emigrate in 2006.

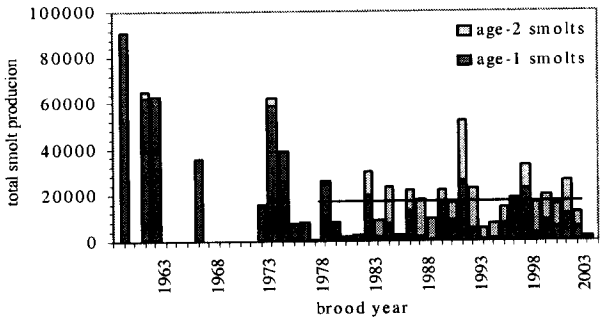



Figure 13. Number of age-1 and -2 sockeye smolts, by brood year, leaving Auke Lake.

Average size of age-1 and -2 sockeye salmon smolts from Auke Lake in 2005 were quite different from each other. Age-1 smolts averaged 79 mm and 4.3 gm, and age-2 smolts were 117 mm and 14 gm. The averages for age-1 and -2 sockeye smolts from Auke Lake are 76 mm and 3.7 gm and 108 mm and 11.5 gm.

Over the last 4 decades there was a trend of increasing size of sockeye smolts at Auke Lake. This trend is most noticeable in the average weights (Figure 14). For the periods 1961-1980, 1981-1990, and 1991-2005, age-1 smolts averaged 2.4, 4.3, and 4.3 gm, an 80% average gain between the first and second periods, and no change between second and third. The heaviest age-1 smolts, 6.8 gm, were in 1998. There were few age-2 smolts produced from 1961-1980, and the average was 4.5 gm. For the 1981-1990 and 1991-2005 periods, age-2 smolts averaged 9.5 and 16.6 gm. Average weight of age-2 smolts increased 111% between the 1961-1980 and 1981-1990 periods, and 75% between the 1981-1990 and 1991-2005 periods. From 1980 through 2005, the weight of age-1 and -2 sockeye smolts, estimated from linear regression lines of annual average weights, increased 0.7 and 3.3%/yr.

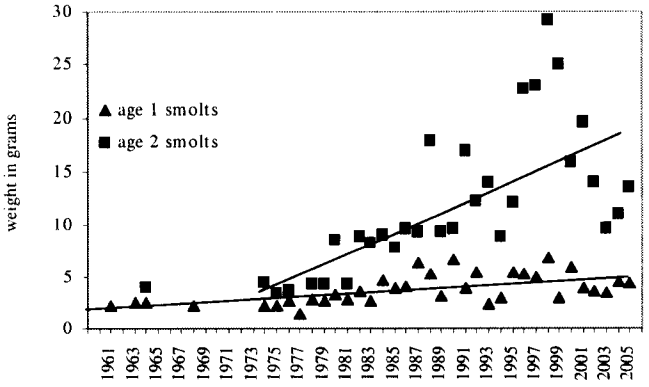



Figure 14. Average weight of age-1 and -2 sockeye salmon smolts leaving Auke Lake, by migration year. The lines are linear trends for each age group.

The proportion of age-2 smolts produced from each brood year of Auke Lake sockeye salmon has varied since the late 1970's. Before 1980, age-2 smolts represented <5% of brood year production, and some broods produced no age-2 smolts. Since the 1980 brood year, the average proportion of age-2 smolts has reached 53% of the total brood year production (Figure 15).

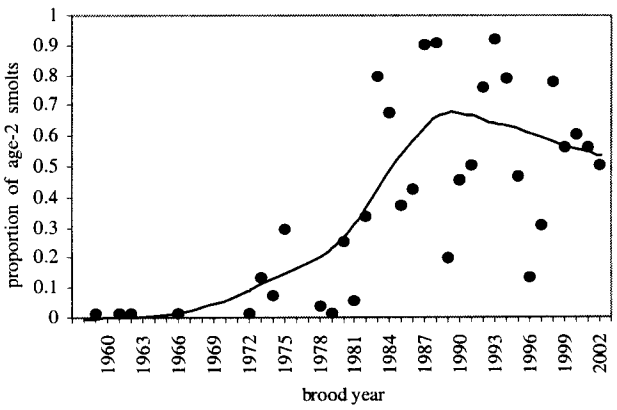



Figure 15. Proportion of age-2 sockeye salmon smolts leaving Auke Lake, by brood year. The line represents the trend smoothed by local weighted regression.

Total biomass-zooplankton models indicate Auke Lake has the capacity to produce about 350 kg of smolts annually. The average biomass of Auke Lake sockeye smolts for years data are available is 145 kg (Figure 16). The total biomass of sockeye smolts (estimated total weight of all smolts in a migration year) from Auke Lake in 2005 was 93 kg, the lowest in two decades. The 2005 smolt biomass was less than average because of the low number of smolts.

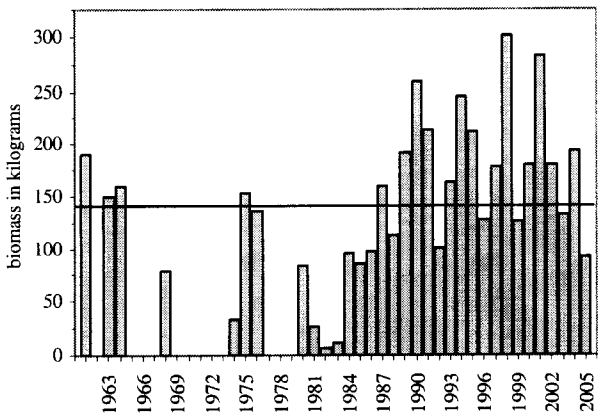



Figure 16. Total annual biomass of sockeye salmon smolts leaving Auke Lake. The line is the average for years data are available.

One measure of freshwater survival, the number of smolts produced per spawner, indicates that for Auke Lake sockeye, 1978-2002 brood years, only 7 broods produced 10 or more smolts per spawner, and the average over the last 24 broods is 8 smolts (Figure 17). The 2002 brood produced a total of 4.3 smolts per spawner. The 2003 brood produced 0.7 age-1 smolts per spawner; however, that production is expected to increase when the age-2 smolts emigrate in 2006.

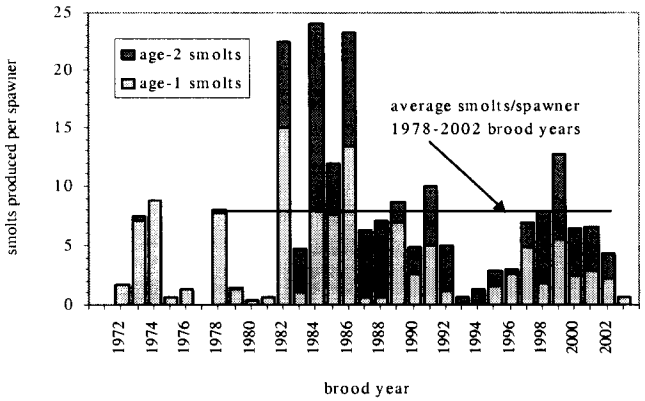



Figure 17. Number of sockeye salmon smolts produced per brood year spawner at Auke Lake. The 2003 brood will produce age-2 smolts in 2005.

Sockeye salmon adults were counted annually at Auke Creek since 1963. From 1963 through 1981 sockeye escapements averaged about 7,000 adults, nearly 3 times greater than since 1982 (Figure 18). During the late 1970s the escapements declined, and, since 1982, the average return of wild fish was about 2,600. Sockeye enhancement research at Auke Creek hatchery, which used Auke Lake sockeye from the 1973-1974 and 1986-1991 broods, boosted subsequent escapements. Progeny from enhancement programs produced 4,600 and 18,000 adult sockeye to the Auke Creek escapements in 1977-79 and 1990-95, respectively. No hatchery sockeye have returned to Auke Creek since the enhancement program ended in 1995.

In 2005, 2,879 adult and 140 jack sockeye salmon returned to Auke Creek. The adult run was greater than the average wild run since 1982, but less than the historical average for all years, 4,528 adults. Most sockeye adults, 2,587 fish, migrated upstream in July (Appendix 6). Estimated survival, smolt to weir recovery of adults, for 2005 returns was 16%.

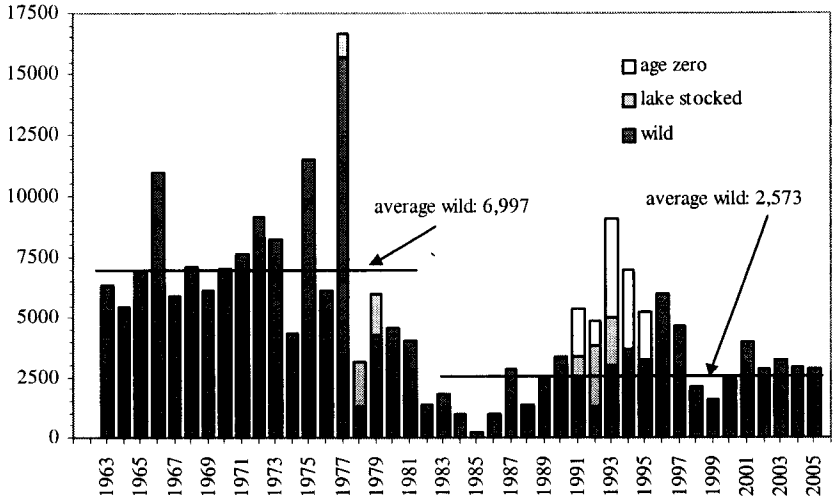



Figure 18. Wild and hatchery sockeye salmon adults at Auke Creek. Hatchery fish were produced from lake stocked fry and age zero smolts at Auke Creek.

Table 2. Wild and hatchery sockeye salmon smolts and adults at Auke Creek.
(stocked and age-0 are hatchery reared).

| | smolts | | | | adults | | | |
|---|---|---|---|---|---|---|---|---|
| Year | wild | stocked | age-0 | total | wild | stocked | age-0 | total |
| 1961 | 90,816 | | | 90,816 | | | | |
| 1962 | | | | | | | | |
| 1963 | 62,067 | | | | 6,391 | | | 6,391 |
| 1964 | 65,242 | | | 65,242 | 5,465 | | | 5,465 |
| 1965 | | | | | 6,889 | | | 6,889 |
| 1966 | | | | | 10,986 | | | 10,986 |
| 1967 | | | | | 5,909 | | | 5,909 |
| 1968 | 35,737 | | | 35,737 | 7,164 | | | 7,164 |
| 1969 | | | | | 6,131 | | | 6,131 |
| 1970 | | | | | 7,034 | | | 7,034 |
| 1971 | | | | | 7,673 | | | 7,673 |
| 1972 | | | | | 9,166 | | | 9,166 |
| 1973 | | | | | 8,259 | | | 8,259 |
| 1974 | 15,399 | | | 15,399 | 4,371 | | | 4,371 |
| 1975 | 59,369 | 10,001 | | 69,371 | 11,461 | | | 11,461 |
| 1976 | 42,029 | 8,585 | | 41,513 | 6,153 | | | 6,153 |
| 1977 | 7,518 | 450 | | 9,312 | 15,683 | 1,000 | | 16,683 |
| 1978 | 8,291 | | | 8,291 | 1,271 | 1,906 | | 3,177 |
| 1979 | | | | | 4,291 | 1,731 | | 6,022 |
| 1980 | 25,299 | | | 25,299 | 4,564 | | | 4,564 |
| 1981 | 9,183 | | | 9,183 | 4,089 | | | 4,089 |
| 1982 | 1,619 | | | 1,619 | 1,334 | | | 1,334 |
| 1983 | 3,170 | | | 3,170 | 1,805 | | | 1,805 |
| 1984 | 20,251 | | | 20,251 | 975 | | | 975 |
| 1985 | 11,747 | | | 11,747 | 240 | | | 240 |
| 1986 | 14,500 | | | 14,500 | 952 | | | 952 |
| 1987 | 17,598 | | | 17,598 | 2,847 | | | 2,847 |
| 1988 | 13,812 | 4,992 | 36,500 | 55,304 | 1,337 | | | 1,337 |
| 1989 | 11,187 | 17,879 | 34,290 | 63,356 | 2,508 | | | 2,508 |
| 1990 | 16,868 | 11,567 | 49,949 | 78,384 | 3,295 | 88 | | 3,383 |
| 1991 | 25,872 | 115 | 138,007 | 163,994 | 2,583 | 832 | 2,009 | 5,425 |
| 1992 | 13,248 | | 57,077 | 70,325 | 1,267 | 2,541 | 1,045 | 4,853 |
| 1993 | 33,616 | | | 33,616 | 2,988 | 2,077 | 4,048 | 9,113 |
| 1994 | 32,009 | | | 32,009 | 3,696 | | 3,296 | 6,993 |
| 1995 | 17,857 | | | 17,857 | 3,221 | | 2,040 | 5,261 |
| 1996 | 7,069 | | | 7,069 | 5,995 | | | 5,995 |
| 1997 | 13,856 | | | 13,848 | 4,671 | | | 4,671 |
| 1998 | 22,496 | | | 22,496 | 2,068 | | | 2,068 |
| 1999 | 25,244 | | | 25,249 | 1,571 | | | 1,571 |
| 2000 | 13,699 | | | 13,699 | 2,480 | | | 2,480 |
| 2001 | 21,428 | | | 21,428 | 3,963 | | | 3,963 |
| 2002 | 17,594 | | | 17,594 | 2,882 | | | 2,882 |
| 2003 | 21,154 | | | 21,154 | 3,239 | | | 3,239 |
| 2004 | 21,106 | | | 21,106 | 2,958 | | | 2,958 |
| 2005 | 8,513 | | | 8,513 | 2,879 | | | 2,879 |
| mean[1] | 16,923 | | | | 4,528 | | | 5,054 |

[1]Mean number of wild smolts is from 1980-2005.

## Chum Salmon

It is not known if chum salmon are native to Auke Creek or were originally strays from other local systems. Probably few chum salmon were ever produced in the Auke Lake system, although adults were observed in all spawning areas, including the intertidal. Chum salmon adults were counted at Auke Creek in 1967 and 1968, and since 1971. The average run to Auke Creek before NMFS enhancement experiments was 20 adults. Chum salmon fry were observed during the 1972-1976 emigrations, but were not counted. In 1976, NMFS started chum salmon enhancement projects, and examined the use of a small population for brood stock development, marine survival of juveniles, and age heritability. Hatchery chum salmon fry were released in 1977-1984, and 1986. All hatchery fry, except in 1984, were marked by ventral fin clip, or adipose fin clip and coded wire tag. No adults were released in Auke Creek from 1976-1983, and none spawned in the intertidal area. In those years all chum adults were captured and spawned for hatchery incubation, thus, no wild fry were captured at Auke Creek from 1977-1984. Since 1994, most or all chum salmon adults at Auke Creek were strays from releases of Macaulay hatchery juveniles at Amalga Harbor and other release sites.

In 2005, 191 chum salmon fry and 944 adults were counted and released at Auke Creek (Table 3). About 50% of the fry emigrated in May (Appendix 5). The midpoint of emigration was May 26. Based on run timing and number of chum salmon adults, it was suspected that most of the adults were strays from Macaulay hatchery releases. Before 1994, chum salmon in Auke Creek immigrated after mid August, usually during the last week of August and early September. In 2005, the 12 chum salmon that entered Auke Creek after the third week of August were counted as Auke Creek fish.

Table 3. Chum salmon fry and adults at Auke Creek.

| | fry | | adults | | | |
|---|---|---|---|---|---|---|
| Year | wild | Auke C. hatchery | strays[1] | Auke C. hatchery | Auke C. wild | total |
| 1967 | | | | | 78 | 78 |
| 1968 | | | | | 76 | 76 |
| 1969 | | | | | | |
| 1970 | | | | | | |
| 1971 | | | | | 10 | 10 |
| 1972 | | | | | 47 | 47 |
| 1973 | | | | | 27 | 27 |
| 1974 | | | | | 5 | 5 |
| 1975 | | | | | 10 | 10 |
| 1976 | | | | | 16 | 16 |
| 1977 | 0 | 12,195 | | | 24 | 24 |
| 1978 | 0 | 18,446 | | | 17 | 17 |
| 1979 | 0 | 20,049 | | 9 | 4 | 13 |
| 1980 | 0 | 2,491 | | 113 | 5 | 118 |
| 1981 | 0 | 67,236 | | 103 | 6 | 109 |
| 1982 | 0 | 54,134 | | 231 | 20 | 251 |
| 1983 | 0 | 41,742 | | 302 | 8 | 310 |
| 1984 | 0 | 58,452 | | 1,898 | 29 | 1,927 |
| 1985 | 7,198 | | | 1,704 | 148 | 1,852 |
| 1986 | 825 | 20,725 | | 1,342 | 50 | 1,392 |
| 1987 | 14,039 | | | 1,824 | 60 | 1,884 |
| 1988 | 8,091 | | | 1,053 | 140 | 1,193 |
| 1989 | 13,750 | | | 166 | 138 | 304 |
| 1990 | 1,916 | | | | 270 | 270 |
| 1991 | 759 | | | | 174 | 174 |
| 1992 | 4,783 | | | | 130 | 130 |
| 1993 | 47 | | | | 121 | 121 |
| 1994 | 137 | | 736 | | 132 | 868 |
| 1995 | 5 | | 1,262 | | 65 | 1,327 |
| 1996 | 4,981 | | 6,700 | | 81 | 6,781 |
| 1997 | 8,307 | | 444 | | 4 | 448 |
| 1998 | 735 | | 225 | | 22 | 247 |
| 1999 | 1,269 | | 340 | | 46 | 386 |
| 2000 | 1,337 | | 4,344 | | 100 | 4,444 |
| 2001 | 23,372 | | 562 | | 26 | 588 |
| 2002 | 1,959 | | 1,567 | | 20 | 1,587 |
| 2003 | 5,373 | | 1,555 | | 23 | 1,578 |
| 2004 | 1,425 | | 3,195 | | 16 | 3,211 |
| 2005 | 191 | | 932 | | 12 | 944 |
| mean | 4,786 | 32,830 | 1,822 | 795 | 58 | 886 |

[1]Estimated Macaulay hatchery-reared chums that strayed to Auke Creek.

## Coho Salmon

Coho salmon spawn in the tributaries to Auke Lake and in the upper 100-m of Auke Creek. Juvenile rearing occurs in Auke Lake and probably most of the watershed, although the exact areas are not known. Total smolt numbers were estimated for 1976, 1977, and 1979, the first years when smolts were adipose fin clipped and tagged with coded wires (Table 4). The total coho smolt emigration was counted since 1980. In 1976, 1977, and 1979 the total number of smolts was estimated from the return of jacks and adults from each smolt cohort. In the return years 1976-1980 there were marked and unmarked coho salmon from Auke Creek, and strays from enhancement projects in the Juneau area. The number of Auke Creek smolts was estimated after determining the number of marked and unmarked stray jacks and adults at the weir, and subtracting the latter two from the total immigration. The number of unmarked, Auke Creek smolts was estimated from the ratio of marked smolts and marked and unmarked jacks and adults of Auke Creek origin. Smolts were not counted or tagged in 1978. Coho adults were counted in 1967, and since 1971. Before 1980, low-height weirs captured salmon adults at Auke Creek. Those weirs were often under water during floods, and some pre-1980 data may be incomplete. Coho salmon were spawned for hatchery incubation, 1978, 1980-1984, and 1996-1997, and all fish were tagged with coded wires and marked with an adipose and ventral fin clip to distinguish them from wild smolts. All hatchery coho jacks and adults with the double fin marks were killed when they returned to Auke Creek.

There is a trend of decreasing coho salmon smolt production at Auke Lake. A total of 4,318 coho salmon smolts left Auke Lake in 2005 (Figure 19). The highest total smolt count was 10,022 in 1980; the average total count is 6,048 (Table 4). In 2005, 4,297 smolts were tagged with coded wires and marked by adipose fin clip. Average sizes of age-1 and -2 smolts were 110 mm and 12 gm and 127 mm and 19 gm. Samples collected throughout the run revealed that 3,061 smolts were age-1 (2003 brood) and 1,257 were age-2 (2002 brood). Total production of smolts from the 2002 brood was 3,113 fish, the second lowest brood-year production on record for Auke Creek. The average production of the 1978-2002 broods is 5,880 smolts.

Coho smolts began emigration during the last week of April, and the emigration midpoint was May 11, the earliest on record at Auke Creek. The average migration midpoint of coho smolts at Auke Creek is May 19 (Figure 20). Emigration midpoints of age-1 and -2 smolts were May 12 and May 10 (Figure 21).

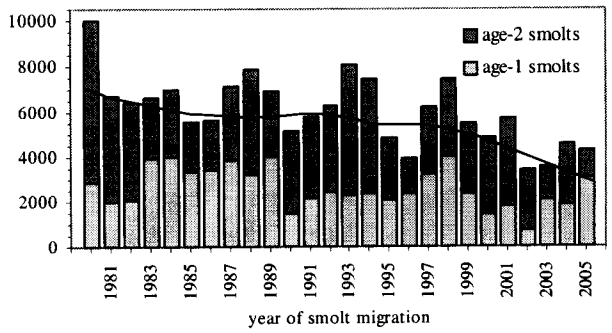



Figure 19. Coho salmon smolts at Auke Creek, 1980-2005, and the trend depicted by local regression.

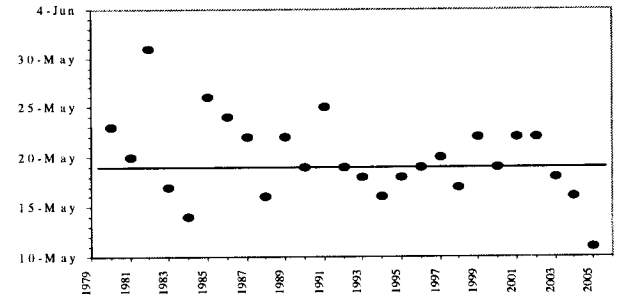



Figure 20. Midpoint dates of coho smolt migrations at Auke Creek. The line is the average.

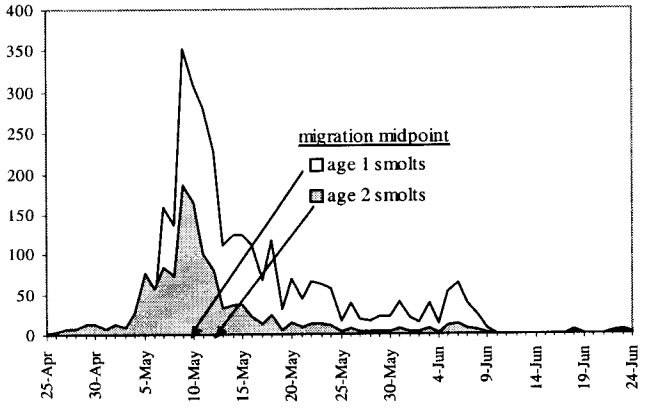



Figure 21. Daily migration of coho salmon smolts at Auke Creek, 2005. The numbers are not stacked in the figure.

The 2005 immigration of coho salmon at Auke Creek included adipose marked and unmarked jacks and adults, and totaled 256 jacks and 450 adults. The jack run was about 30 fewer than average (Figure 22). The adult run was 260 fish fewer than average, and one of the lowest on record (Figure 23). A total of 252 jacks and 446 adults were adipose fin marked, both less than average (Table 4). Most jack and adult coho salmon entered Auke Creek before the end of September. Coded wire tags were collected from carcasses recovered at the weir. All tags were from the Auke Lake stock of coho salmon. The origin of the unmarked jacks and adults is not known. Immigration of the marked fish was earlier than the unmarked. Most marked fish entered Auke Creek before the last week of September, and the unmarked fish did so from late September through October.

Harvest of coho salmon from Auke Creek was determined from recovery of coded wire tags in commercial and sport fishery port sampling programs. In 2005, the harvest of Auke Creek coho salmon was estimated at 280 adults, a 39% harvest rate. Average harvest and harvest rate of Auke Creek coho salmon is 490 adults and 42%.

Total survival of the coho salmon smolts tagged at Auke Creek in 2004 was 20.5% (jacks returned in 2004 and adults in 2005). Survival was estimated from the number of smolts marked at Auke Creek, and the number of marked jacks and adults at the weir and adults in the fishery. Total survival was the combined return of jacks 4.6% (returned in 2004), adults at the weir 9.8%, and adults harvested 6.1% (Figure 24, Table 4). Survival to adults, weir plus fishery (excluding jacks), was 16%, less then the average of 20% for Auke Creek, and the lowest in a decade. .

Some smolts return as jacks the same year they emigrate at Auke Creek. In 2005, the 252 marked jacks at Auke Creek represented a survival of 5.9%; above average of 4.2% (Table 4).

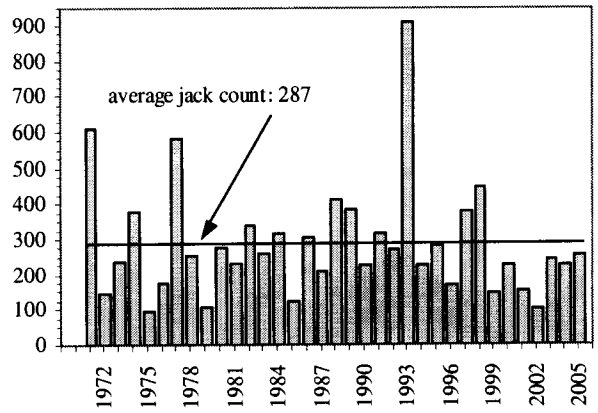



Figure 22. Coho salmon jacks at Auke Creek.

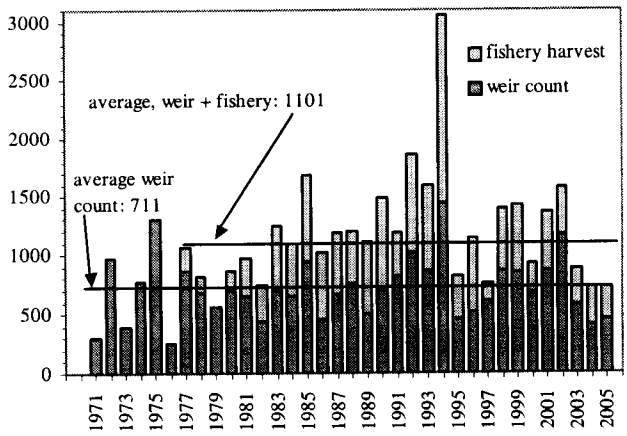



Figure 23. Weir counts and fishery harvests of Auke Creek coho salmon adults.

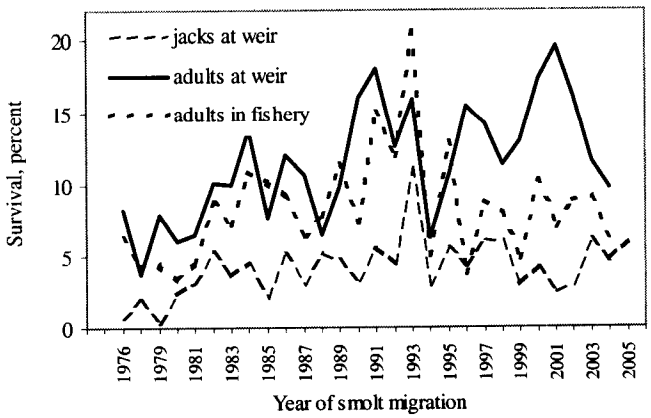



Figure 24. Ocean survival of coho salmon smolts from Auke Creek. Survivals are for tagged fish by year of smolt migration. The lines are not stacked in the figure.

Table 4. Annual numbers of Auke Creek coho salmon smolts, jacks, and adults. Smolt data are total number and number released with coded wire tags. Weir recoveries are total number and number of tagged jacks and adults. Adults recovered in the fishery are tagged fish. Survival data are for tagged smolts by year of smolt migration, e.g., smolts tagged in 1976 returned as jacks in 1976 and as adults in 1977, boxes shaded for reference.

| | smolts | | total at weir | | tagged fish recovered | | | ocean survival, % | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| year | total | tagged | jack | adult | jacks weir | adults weir | adults fishery | jacks weir | adults weir | adults fishery | total |
| 1971 | | | 608 | 308 | | | | | | | |
| 1972 | | | 146 | 967 | | | | | | | |
| 1973 | | | 238 | 399 | | | | | | | |
| 1974 | | | 379 | 768 | | | | | | | |
| 1975 | | | 98 | 1,310 | | | | | | | |
| 1976[1] | 10,772 | 2,992 | 176 | 262 | 21 | | | 0.7 | 8.2 | 6.3 | 15.2 |
| 1977[1] | 18,686 | 3,038 | 583 | 868 | 59 | 246 | 189 | 1.9 | 3.7 | 4.3 | 9.9 |
| 1978 | | | 256 | 683 | | 112 | 131 | | | | |
| 1979[1] | 9,419 | 3,872 | 107 | 566 | 12 | | | 0.3 | 7.9 | 4.4 | 12.6 |
| 1980 | 10,022 | 9,821 | 276 | 698 | 226 | 306 | 170 | 2.3 | 6.0 | 3.4 | 11.7 |
| 1981 | 6,721 | 6,372 | 231 | 646 | 203 | 592 | 330 | 3.2 | 6.5 | 4.6 | 14.3 |
| 1982 | 6,445 | 6,245 | 338 | 447 | 335 | 417 | 292 | 5.4 | 10.1 | 8.7 | 24.2 |
| 1983 | 6,631 | 6,115 | 261 | 694 | 224 | 630 | 545 | 3.7 | 10.0 | 7.3 | 21.0 |
| 1984 | 7,012 | 6,751 | 315 | 651 | 304 | 614 | 444 | 4.5 | 13.9 | 11.0 | 29.4 |
| 1985 | 5,601 | 5,545 | 122 | 942 | 118 | 937 | 741 | 2.1 | 7.7 | 10.3 | 20.1 |
| 1986 | 5,666 | 5,502 | 307 | 454 | 288 | 429 | 570 | 5.2 | 12.1 | 9.3 | 26.7 |
| 1987 | 7,166 | 6,883 | 212 | 668 | 206 | 668 | 511 | 3.0 | 10.7 | 6.5 | 20.2 |
| 1988 | 7,888 | 7,751 | 412 | 756 | 406 | 736 | 445 | 5.2 | 6.5 | 7.8 | 19.5 |
| 1989 | 6,911 | 6,819 | 386 | 502 | 329 | 502 | 604 | 4.8 | 9.9 | 11.5 | 26.3 |
| 1990 | 5,132 | 5,020 | 225 | 697 | 165 | 678 | 785 | 3.3 | 16.1 | 7.4 | 26.8 |
| 1991 | 5,764 | 5,671 | 317 | 820 | 314 | 808 | 371 | 5.5 | 18.0 | 15.1 | 38.6 |
| 1992 | 6,262 | 6,106 | 271 | 1,020 | 271 | 1,020 | 855 | 4.4 | 12.7 | 12.0 | 29.1 |
| 1993 | 8,103 | 7,844 | 910 | 859 | 876 | 774 | 730 | 11.2 | 16.0 | 20.6 | 47.8 |
| 1994 | 7,416 | 7,255 | 229 | 1,437 | 212 | 1,253 | 1,618 | 2.9 | 6.3 | 5.0 | 14.2 |
| 1995 | 4,869 | 4,798 | 283 | 460 | 269 | 455 | 360 | 5.6 | 10.7 | 13.0 | 29.4 |
| 1996 | 3,962 | 3,919 | 168 | 515 | 168 | 515 | 626 | 4.3 | 15.5 | 3.8 | 23.5 |
| 1997 | 6,207 | 6,080 | 381 | 609 | 376 | 606 | 148 | 6.2 | 14.2 | 8.8 | 29.2 |
| 1998 | 7,430 | 7,379 | 449 | 862 | 447 | 862 | 538 | 6.1 | 11.5 | 8.0 | 25.5 |
| 1999 | 5,491 | 5,123 | 149 | 845 | 149 | 845 | 589 | 2.9 | 13.0 | 4.8 | 20.7 |
| 2000 | 4,891 | 4,862 | 227 | 683 | 206 | 666 | 244 | 4.2 | 17.3 | 10.4 | 32.0 |
| 2001 | 5,742 | 5,687 | 153 | 865 | 142 | 842 | 506 | 2.5 | 19.6 | 7.1 | 29.1 |
| 2002 | 3,434 | 3,401 | 104 | 1,176 | 97 | 1,112 | 402 | 2.9 | 16.2 | 8.8 | 27.9 |
| 2003 | 3,574 | 3,534 | 244 | 585 | 219 | 551 | 300 | 6.2 | 11.7 | 9.1 | 26.9 |
| 2004 | 4,581 | 4,572 | 226 | 416 | 210 | 412 | 320 | 4.6 | 9.8 | 6.1 | 20.5 |
| 2005 | 4,318 | 4,287 | 256 | 450 | 252 | 446 | 280 | 5.9 | | | |
| mean | 6,048 | | 287 | 711 | 245 | 644 | 487 | 4.2 | 11.5 | 8.4 | 24.0 |

[1]- total smolt count estimated, not all smolts were captured and estimated numbers are not included in averages.

## Dolly Varden Char

The Auke Lake system is important for spawning, rearing, and over-wintering Dolly Varden char in the Juneau area. Emigrants were counted in 1970 and since 1980, but spawner numbers and smolt production are not known. Emigrants were marked or tagged in 1970, 1980, 1983, and 1990, and marked fish were observed in subsequent years. Marked fish captured at Auke Creek, 1998-2000, were probably emigrants marked at Windfall Lake in 1997.

Auke Creek Dolly Varden abundance is in a decreasing trend that began in 1996 (Figure 25). The 2005 emigration of 3,544 Dolly Varden at Auke Creek was the lowest since 1985, and less than the average of 6,115 (Table 5). Little emigration occurs in March, only 8 left Auke Lake during March 2005. Daily counts never exceeded 50 fish until the last week of April, and 82% of the run occurred between April 27 and May 7 (Appendix 5). The midpoint of emigration was April 29, the earliest on record (Figure 26). The average midpoint for all years is May 7.

Immigrant Dolly Varden were counted at Auke Creek since 1997. A total of 2,795 Dolly Varden were captured at the upstream weir in 2005. The average number of Dolly Varden immigrants at Auke Creek, 1997-2005 is 4,111 (Table 5).

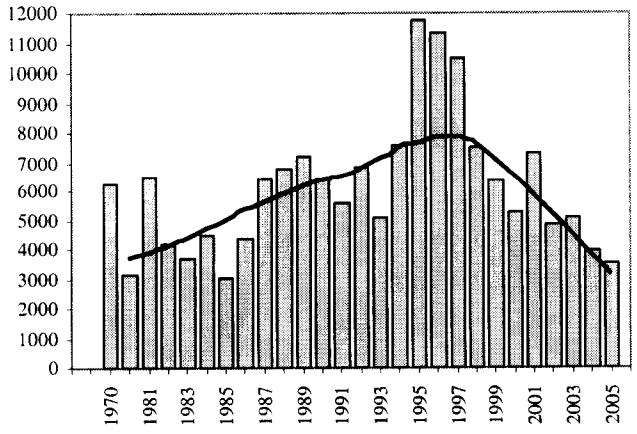



Figure 25. Downstream migrant Dolly Varden at Auke Creek. The line is the abundance trend, 1980-2005, depicted by local weighted regression.

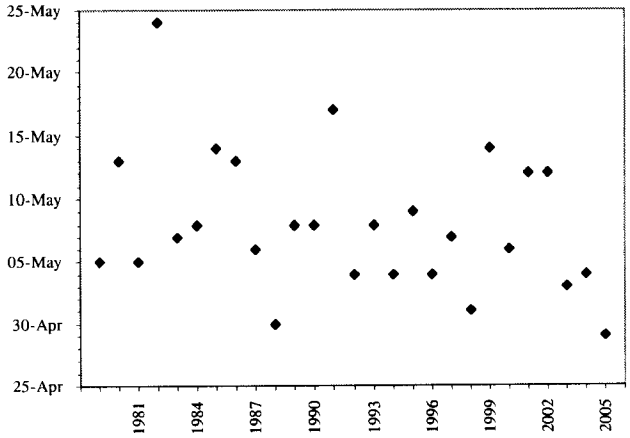



Figure 26. Midpoint dates of downstream migration of Dolly Varden at Auke Creek., 1970, and 1980-2005.

Table 5. Number of Dolly Varden migrants at Auke Creek, 1970, 1980-2005. (Fish not marked = n.m., weir mortalities = mort.)

| | downstream migrants | | | | upstream |
|---|---|---|---|---|---|
| year | total | n.m. | marked | mort | total |
| 1970[1] | 6,249 | 0 | 6,007 | 242 | |
| 1980[1] | 3,132 | 92 | 2,928 | 112 | |
| 1981 | 6,461 | 5,776 | 685 | 0 | |
| 1982 | 4,172 | 3,929 | 222 | 21 | |
| 1983[1] | 3,718 | 2,131 | 1,587 | 0 | |
| 1984 | 4,512 | 4,229 | 283 | 0 | |
| 1985 | 3,052 | 3,006 | 46 | 0 | |
| 1986 | 4,351 | 4,351 | 0 | 0 | |
| 1987 | 6,444 | 6,420 | 2 | 21 | |
| 1988 | 6,770 | 6,770 | 0 | 0 | |
| 1989 | 7,230 | 7,155 | 2 | 73 | |
| 1990[1] | 6,426 | 2,318 | 4,107 | 0 | |
| 1991 | 5,559 | 4,631 | 881 | 47 | |
| 1992 | 6,839 | 6,715 | 110 | 14 | |
| 1993 | 5,075 | 5,064 | 7 | 4 | |
| 1994 | 7,604 | 7,600 | 4 | 0 | |
| 1995 | 11,72 | 11,72 | 0 | 0 | |
| 1996 | 11,32 | 11,32 | 0 | 0 | |
| 1997 | 10,50 | 10,50 | 0 | 0 | 5,705 |
| 1998[2] | 7,532 | 7,440 | 70 | 22 | 4,993 |
| 1999[2] | 6,393 | 6,377 | 16 | 0 | 4,709 |
| 2000[2] | 5,254 | 5,248 | 6 | 0 | 3,665 |
| 2001 | 7,356 | 7,356 | 0 | 0 | 4,249 |
| 2002 | 4,858 | 4858 | 0 | 0 | 4,341 |
| 2003 | 5,067 | 5,067 | 0 | 0 | 3,978 |
| 2004 | 3,955 | 3,955 | 0 | 0 | 2,564 |
| 2005 | 3,544 | 3,544 | | | 2,795 |
| mean | 6,115 | | | | 4,111 |

[1] Years fish were marked and\or tagged at Auke Creek
[2] Marked fish recovered but not marked at Auke Creek

## Cutthroat and Steelhead Trout

Little was known of the life history of cutthroat trout in the Auke Lake system before the start of tagging programs in 1994 and lake population estimates in 1998. It is apparent that Auke Lake cutthroat trout have the most complex life history of any fish in the system. Recent studies at Auke Creek and Auke Lake have produced world class information on these fish. Anecdotal information suggests the pre-1960 population of cutthroat trout in Auke Lake was larger than it is now. Emigrant cutthroat trout were counted in 1970 and since 1980. Immigrants were counted since 1997. Mature emigrants were spawned in 1981, 1982, 1985, 1986, 1991, and 1993 for hatchery incubation. The resulting progeny were fin marked and released in Auke Lake, and hatchery fish were seen in subsequent years (Table 6).

Auke Creek cutthroat trout emigrants are in a decreasing trend that began in 1996 (Figure 27). A total of 133 emigrant cutthroat trout were counted in 2005, less than the average 245, and the lowest in 2 decades. At the time of capture, 41 trout were adipose marked and possessed a passive integrated transponder, PIT, tag, 89 were not marked, and 3 were adipose marked and had no PIT tag. All fish without a PIT tag were given one before release at the weir. Most cutthroat emigrated in April, and the migration midpoint was April 29, the second earliest on record (Figure 28). The average emigration date is May 15.

In 2005 there were 138 immigrant cutthroat trout at Auke Creek. A total of 21 immigrants were missing the adipose fin and had a PIT tag, 115 were unmarked, and 2 were adipose marked and had no PIT tag.

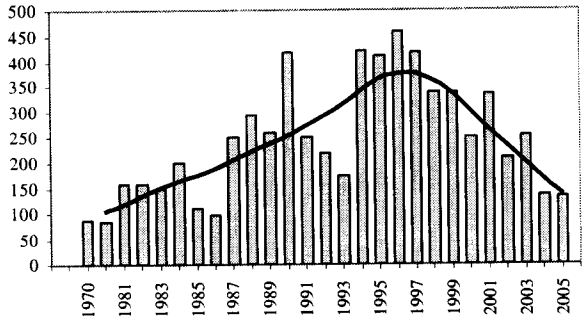



Figure 27. Number of emigrant cutthroat trout at Auke Creek. The line is the 1980-2005 trend depicted by local weighted regression.

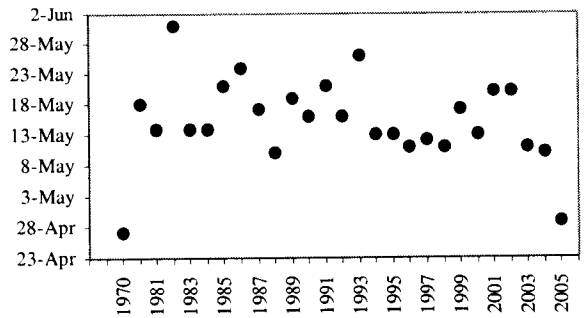



Figure 28. Downstream migration midpoint dates of cutthroat trout at Auke Creek, 1970, and 1980-2005.

Table 6. Number of cutthroat trout migrants at Auke Creek.

| | downstream | | | upstream |
|---|---|---|---|---|
| | wild | hatch | total | total |
| 1970 | 90 | | 90 | |
| 1980 | 85 | | 85 | |
| 1981 | 157 | | 157 | |
| 1982 | 157 | | 157 | |
| 1983 | 150 | 78 | 228 | |
| 1984 | 198 | 104 | 302 | |
| 1985 | 112 | 49 | 161 | |
| 1986 | 99 | 39 | 138 | |
| 1987 | 251 | 691 | 942 | |
| 1988 | 294 | 396 | 690 | |
| 1989 | 258 | 152 | 410 | |
| 1990 | 417 | 89 | 506 | |
| 1991 | 250 | 23 | 273 | |
| 1992 | 219 | 7 | 226 | |
| 1993 | 174 | 16 | 190 | |
| 1994 | 422 | 9 | 431 | |
| 1995 | 412 | 58 | 470 | |
| 1996 | 459 | 140 | 599 | |
| 1997 | 418 | 82 | 500 | 467 |
| 1998 | 340 | 34 | 374 | 361 |
| 1999 | 340 | 11 | 351 | 205 |
| 2000 | 249 | 1 | 250 | 105 |
| 2001 | 337 | | 337 | 228 |
| 2002 | 210 | | 210 | 241 |
| 2003 | 254 | | 254 | 129 |
| 2004 | 136 | | 136 | 91 |
| 2005 | 133 | | 133 | 138 |
| mean | 245 | | 319 | 218 |

Steelhead trout juveniles, all fish were less than 210 mm, were captured at Auke Creek in 2005. Twelve emigrants were captured May 5-20, and 20 immigrants were captured mostly in late September and October. No steelhead were marked or tagged.

## Chinook Salmon

Chinook salmon are not native to the Auke Lake system. Chinook captured at Auke Creek are hatchery fish from releases of juveniles in the Juneau area, including Auke Bay near the mouth of Auke Creek. These releases began as a 3-year cooperative study in 1986 to examine survival and homing and straying of hatchery chinook. The original study plan and fish transport permit required that all chinook be killed when they entered Auke Creek. This was to prevent the possible chinook-sockeye disease interactions, particularly infectious hematopoietic necrosis virus. The project continues under an arrangement between Sport Fish Division, ADF&G, and Douglas Island Pink and Chum Incorporated. Juveniles were released near Auke Creek in 2005.

At Auke Creek, chinook are captured at the weir, and classified as mini-jacks or adults based on size. All mini-jacks are males, ≤ 250 mm fork length, that mature and return to fresh water the same year they were released as smolts. Adults are >250 mm and remain at large for one year or more. As agreed at the 2003 annual meeting, chinook were not examined for marks or tags after 2002.

In 2005, the migration of chinook adults at Auke Creek was restricted by the low stream flow and high temperatures during July and through mid August. A total of 158 chinook salmon adults and 159 mini-jacks were captured at the weir (Figure 29, Table 7). Most chinook adults were captured between August 19 and September 6 (Appendix 6). All chinook were killed at the weir.

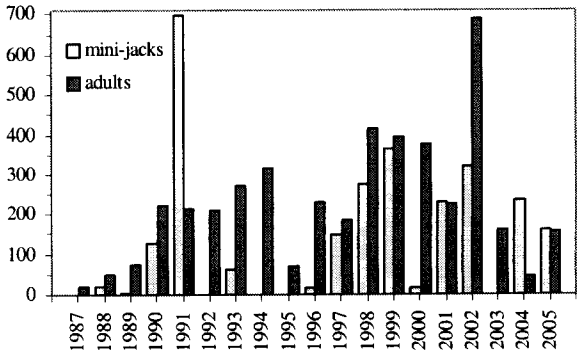



Figure 29. Number of chinook salmon at Auke Creek.

Table 7. Number of chinook salmon at Auke Creek, 1987-2005. Mini jacks returned the same year of smolt release, and adults are 1-ocean or older. Fish were not sampled for fin marks after 2002.

| | mini-jacks | | | adults | | |
|---|---|---|---|---|---|---|
| year | marked | unmarked | total | marked | unmarked | total |
| 1987 | | | | 19 | | 19 |
| 1988 | 15 | 6 | 21 | 50 | | 50 |
| 1989 | | 4 | 4 | 53 | 21 | 74 |
| 1990 | 36 | 91 | 127 | 132 | 89 | 221 |
| 1991 | 239 | 460 | 699 | 96 | 117 | 213 |
| 1992 | | 1 | 1 | 52 | 158 | 210 |
| 1993 | 22 | 40 | 62 | 62 | 210 | 272 |
| 1994 | 1 | 1 | 2 | 91 | 223 | 314 |
| 1995 | | 1 | 1 | 20 | 49 | 69 |
| 1996 | 1 | 15 | 16 | 87 | 143 | 230 |
| 1997 | 23 | 126 | 149 | 42 | 141 | 183 |
| 1998 | 45 | 231 | 276 | 69 | 347 | 416 |
| 1999 | 41 | 326 | 367 | 49 | 343 | 392 |
| 2000 | | 15 | 15 | 36 | 341 | 377 |
| 2001 | 21 | 207 | 228 | 28 | 196 | 224 |
| 2002 | 20 | 299 | 319 | 72 | 616 | 688 |
| 2003 | | | 0 | | | 162 |
| 2004 | | | 232 | | | 46 |
| 2005 | | | 159 | | | 158 |
| mean | 42 | 122 | 149 | 60 | 214 | 227 |

Appendix 1. Emigrant wild salmonids at Auke Creek, 1961-2005. The sockeye and coho salmon averages are for 1980-2005, and chums 1985-2005.

| Year | Sockeye Salmon Smolts | Pink Salmon Fry | Chum Salmon Fry | Coho Salmon Smolts | Dolly Varden | Cut-throat trout | Steel-head trout |
|---|---|---|---|---|---|---|---|
| 1961 | 90,816 | | | | | | |
| 1962 | | | | | | | |
| 1963 | 62,067 | | | | | | |
| 1964 | 65,242 | | | | | | |
| 1965 | | | | | | | |
| 1966 | | | | | | | |
| 1967 | | | | | | | |
| 1968 | 35,737 | | | | | | |
| 1969 | | | | | | | |
| 1970 | | | | | 6,249 | 90 | |
| 1971 | | | | | | | |
| 1972 | | 157,189 | | | | | |
| 1973 | | 73,900 | | | | | |
| 1974 | 15,399 | 277,624 | | | | | |
| 1975 | 59,369 | 247,091 | | | | | |
| 1976 | 42,029 | 108,195 | | 10,772 | | | |
| 1977 | 7,518 | 119,442 | 0 | 18,686 | | | |
| 1978 | 8,291 | 129,714 | 0 | | | | |
| 1979 | | 23,270 | 0 | 9,419 | | | |
| 1980 | 25,299 | 74,047 | 0 | 10,022 | 3,132 | 85 | |
| 1981 | 9,183 | 110,552 | 0 | 6,721 | 6,461 | 157 | |
| 1982 | 1,619 | 119,548 | 0 | 6,445 | 4,172 | 157 | |
| 1983 | 3,181 | 164,784 | 0 | 6,631 | 3,718 | 150 | |
| 1984 | 20,251 | 169,552 | 0 | 7,012 | 4,512 | 198 | |
| 1985 | 11,747 | 110,001 | 7,198 | 5,601 | 3,052 | 112 | |
| 1986 | 14,503 | 123,887 | 825 | 5,666 | 4,351 | 99 | |
| 1987 | 17,598 | 43,502 | 14,039 | 7,166 | 6,444 | 251 | |
| 1988 | 13,812 | 113,061 | 8,091 | 7,888 | 6,770 | 294 | |
| 1989 | 11,187 | 116,870 | 13,750 | 6,911 | 7,230 | 258 | |
| 1990 | 16,868 | 96,651 | 1,916 | 5,132 | 6,426 | 417 | 6 |
| 1991 | 25,872 | 242,772 | 759 | 5,764 | 5,559 | 250 | 12 |
| 1992 | 13,248 | 98,447 | 4,783 | 6,262 | 6,839 | 219 | 10 |
| 1993 | 33,616 | 237,073 | 47 | 8,103 | 5,075 | 174 | 5 |
| 1994 | 32,009 | 11,603 | 137 | 7,416 | 7,604 | 422 | 8 |
| 1995 | 17,857 | 88,197 | 5 | 4,869 | 11,728 | 412 | 26 |
| 1996 | 7,069 | 41,359 | 4,981 | 3,963 | 11,323 | 459 | 24 |
| 1997 | 13,856 | 31,092 | 8,307 | 6,207 | 10,506 | 418 | 9 |
| 1998 | 22,496 | 60,785 | 735 | 7,430 | 7,532 | 340 | 15 |
| 1999 | 25,244 | 53,533 | 1,269 | 5,491 | 6,393 | 340 | 5 |
| 2000 | 13,699 | 132,075 | 1,337 | 4,891 | 5,254 | 249 | 6 |
| 2001 | 21,428 | 61,504 | 23,372 | 5,742 | 7,356 | 337 | 8 |
| 2002 | 17,594 | 150,149 | 1,959 | 3,434 | 4,858 | 210 | 15 |
| 2003 | 21,154 | 95,132 | 5,373 | 3,574 | 5,067 | 254 | 4 |
| 2004 | 21,106 | 169,568 | 1,425 | 4,581 | 3,955 | 136 | 4 |
| 2005 | 8,513 | 87,928 | 191 | 4,318 | 3,544 | 133 | 12 |
| average | 16,923 | 115,885 | 4,786 | 6,048 | 6,115 | 245 | 11 |

Appendix 2. Immigrant salmonids at Auke Creek, 1963-2005. Hatchery fish are included: sockeye 1977-79, 1989-95; pink 1973-94, 1996, 1998-2001; chum 1979-91, 1994-2005; chinook, all years.

| Year | Sockeye salmon | Pink salmon | Chum salmon | Coho salmon | Chinook salmon | Dolly Varden | Cut-throat | Steel-head |
|---|---|---|---|---|---|---|---|---|
| 1963 | 6,391 | | | | | | | |
| 1964 | 5,465 | | | | | | | |
| 1965 | 6,889 | | | | | | | |
| 1966 | 10,986 | | | | | | | |
| 1967 | 5,909 | 3,761 | 78 | | | | | |
| 1968 | 7,164 | 2,638 | 76 | | | | | |
| 1969 | 6,131 | | | | | | | |
| 1970 | 7,034 | | | | | | | |
| 1971 | 7,673 | 2,090 | 10 | 308 | | | | |
| 1972 | 9,166 | 1,768 | 47 | 967 | | | | |
| 1973 | 8,259 | 4,948 | 27 | 399 | | | | |
| 1974 | 4,371 | 6,260 | 5 | 768 | | | | |
| 1975 | 11,461 | 14,261 | 10 | 1,310 | | | | |
| 1976 | 6,153 | 2,525 | 16 | 262 | | | | |
| 1977 | 16,683 | 15,848 | 24 | 868 | | | | |
| 1978 | 3,177 | 18,410 | 17 | 683 | | | | |
| 1979 | 6,022 | 19,003 | 13 | 566 | | | | |
| 1980 | 4,564 | 20,187 | 118 | 698 | | | | |
| 1981 | 4,089 | 14,450 | 109 | 646 | | | | |
| 1982 | 1,334 | 10,658 | 251 | 447 | | | | |
| 1983 | 1,805 | 24,827 | 310 | 694 | | | | |
| 1984 | 975 | 5,271 | 1,927 | 651 | | | | |
| 1985 | 240 | 26,317 | 1,852 | 942 | | | | |
| 1986 | 952 | 2,305 | 1,392 | 454 | | | | |
| 1987 | 2,827 | 7,914 | 1,884 | 668 | 19 | | | |
| 1988 | 1,337 | 8,140 | 1,093 | 756 | 50 | | | |
| 1989 | 2,508 | 5,016 | 304 | 502 | 74 | | | |
| 1990 | 3,383 | 21,806 | 270 | 697 | 221 | | | |
| 1991 | 5,425 | 6,878 | 174 | 820 | 213 | | | |
| 1992 | 4,853 | 22,101 | 130 | 1,020 | 210 | | | |
| 1993 | 9,113 | 1,696 | 121 | 859 | 272 | | | |
| 1994 | 6,993 | 22,533 | 868 | 1,437 | 314 | | | |
| 1995 | 5,261 | 1,548 | 1,327 | 460 | 69 | | | |
| 1996 | 5,995 | 4,374 | 6,781 | 515 | 230 | | | |
| 1997 | 4,671 | 2,774 | 444 | 609 | 183 | 5,705 | 467 | |
| 1998 | 2,068 | 2,879 | 247 | 862 | 416 | 4,993 | 361 | |
| 1999 | 1,571 | 30,097 | 386 | 845 | 392 | 4,709 | 205 | 3 |
| 2000 | 2,480 | 2,491 | 4,444 | 683 | 377 | 3,665 | 105 | 4 |
| 2001 | 3,963 | 8,323 | 588 | 865 | 224 | 4,249 | 228 | 11 |
| 2002 | 2,882 | 4,928 | 1,587 | 1,176 | 688 | 4,341 | 241 | 3 |
| 2003 | 3,239 | 10,580 | 1,578 | 585 | 162 | 3,978 | 129 | 0 |
| 2004 | 2,958 | 6,802 | 3,211 | 416 | 46 | 2,564 | 91 | 2 |
| 2005 | 2,879 | 10,010 | 944 | 450 | 158 | 2,795 | 138 | 20 |
| average | 5,053 | 10,173 | 883 | 711 | 227 | 4,111 | 218 | 6 |

Appendix 3. Daily water temperatures at Auke Creek, 2005.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 1.7 | 1.8 | 3.3 | 10.5 | 16.1 | 17.5 | 16.5 | 13.4 | 9.9 | 6.1 | 2.3 |
| 2 | 1.6 | 1.8 | 1.9 | 3.4 | 10.8 | 16 | 17 | 16.9 | 13.4 | 9.8 | 6 | 1.8 |
| 3 | 1.7 | 1.8 | 1.9 | 3.4 | 10.8 | 16.2 | 16.6 | 16.6 | 13.9 | 9.5 | 5.8 | 1.5 |
| 4 | 1.8 | 1.7 | 1.9 | 3.6 | 11.3 | 15.9 | 16.7 | 15.9 | 14 | 9.6 | 5.7 | 1.4 |
| 5 | 1.8 | 1.5 | 1.9 | 3.7 | 11.3 | 16.1 | 17.3 | 15.5 | 14.1 | 9.5 | 5.5 | 1.1 |
| 6 | 1.6 | 1.4 | 1.9 | 3.9 | 12.2 | 17 | 17.6 | 15.6 | 13.4 | 9.4 | 5 | 1.3 |
| 7 | 1.5 | 1.6 | 1.9 | 3.8 | 13.6 | 17.4 | 17.5 | 16 | 13 | 9.5 | 4.9 | 1.4 |
| 8 | 1.6 | 1.7 | 1.9 | 4 | 14.2 | 18.4 | 17.1 | 16.9 | 13.1 | 9.5 | 5 | 1.6 |
| 9 | 1.5 | 1.6 | 2 | 4.1 | 15 | 18.2 | 17.5 | 18.3 | 13.3 | 9.3 | 5.1 | 2.4 |
| 10 | 1.6 | 1.6 | 1.9 | 4.2 | 15.5 | 17.9 | 17.2 | 18.6 | 13.6 | 9 | 5 | 2 |
| 11 | 1.1 | 1.6 | 1.9 | 4.2 | 15.2 | 17.9 | 16.9 | 19.3 | 13.4 | 8.9 | 4.8 | 2.1 |
| 12 | 0.7 | 1.5 | 1.8 | 4.5 | 14.8 | 17.8 | 16.8 | 19.7 | 13.3 | 8.7 | 4.3 | 2.3 |
| 13 | 0.9 | 1.4 | 1.9 | 4.8 | 14.4 | 17.8 | 16.8 | 20 | 13.1 | 8.7 | 4.1 | 2.3 |
| 14 | 1.1 | 1.4 | 2 | 5.1 | 14.6 | 17.1 | 16.5 | 19.9 | 13.2 | 8.6 | 3.9 | 2.1 |
| 15 | 1.1 | 1.3 | 2 | 5.7 | 14.2 | 16.3 | 16.6 | 19.5 | 13.7 | 8.3 | 3.9 | 2.3 |
| 16 | 0.8 | 1.4 | 2.1 | 6.5 | 14.6 | 16.6 | 17.1 | 18.7 | 14 | 8.2 | 4.2 | 2.5 |
| 17 | 1 | 1.3 | 2.3 | 6.8 | 14.4 | 17.5 | 16.8 | 18.2 | 13.1 | 7.8 | 4.2 | 2.4 |
| 18 | 1 | 1.3 | 2.3 | 6.7 | 15.3 | 18.6 | 16.9 | 17.8 | 12.4 | 7.8 | 4.2 | 2.1 |
| 19 | 1.3 | 1.2 | 2.2 | 6.6 | 15 | 18 | 17.1 | 17.2 | 11.7 | 7.8 | 4.1 | 2 |
| 20 | 1.4 | 1.3 | 2.2 | 6 | 14.8 | 17.4 | 17.6 | 16.5 | 11.4 | 7.6 | 4.1 | 2 |
| 21 | 1.4 | 1.2 | 2.5 | 6.2 | 14.5 | 16.5 | 17.8 | 16.1 | 11.3 | 7.5 | 4.3 | 2.1 |
| 22 | 1.5 | 1.2 | 2.7 | 6 | 14.7 | 16.7 | 17.5 | 15.9 | 11.4 | 7.5 | 4.4 | 2.2 |
| 23 | 1.5 | 1.3 | 2.8 | 6.6 | 15.3 | 16.5 | 17.8 | 15.6 | 11.3 | 7.3 | 4.6 | 2.2 |
| 24 | 1.7 | 1.4 | 2.8 | 8.7 | 15.4 | 16.9 | 17.9 | 15.4 | 11.3 | 7.1 | 4.9 | 2.2 |
| 25 | 1.8 | 1.4 | 2.9 | 10 | 15.4 | 17.8 | 17.6 | 14.9 | 11.1 | 7 | 4.8 | 2.3 |
| 26 | 1.7 | 1.4 | 3.1 | 10.3 | 15.9 | 18.5 | 17.2 | 14.7 | 11 | 6.8 | 4.3 | 2.1 |
| 27 | 1.7 | 1.4 | 3.3 | 11.6 | 16 | 18.8 | 16.9 | 14.7 | 10.8 | 6.6 | 4.2 | 2 |
| 28 | 1.7 | 1.5 | 3.2 | 12.4 | 15.8 | 18.5 | 16.7 | 15.1 | 10.5 | 6.5 | 3.9 | 2 |
| 29 | 1.7 | | 3.2 | 12.2 | 16.1 | 18 | 16.7 | 15.1 | 10.2 | 6.4 | 3.5 | 2.1 |
| 30 | 1.7 | | 3.3 | 10.9 | 16 | 17.9 | 16.8 | 14.3 | 10.1 | 6.3 | 3 | 2.1 |
| 31 | 1.7 | | 3.4 | | 16 | | 16.3 | 13.8 | | 6.2 | | 1.7 |
| Ave. | 1.4 | 1.5 | 2.4 | 6.3 | 14.3 | 17.3 | 17.1 | 16.7 | 12.5 | 8.1 | 4.6 | 2.0 |

Appendix 4. Dates of ice-out on Auke Lake.

| year | date | year | date | year | date |
|---|---|---|---|---|---|
| 1960 | April 26 | 1980 | April 19 | 2000 | April 2 |
| 1961 | | 1981 | March 26 | 2001 | April 6 |
| 1962 | | 1982 | May 14 | 2002 | April 28 |
| 1963 | April 29 | 1983 | April 18 | 2003 | April 14 |
| 1964 | | 1984 | March 29 | 2004 | April 5 |
| 1965 | | 1985 | April 26 | 2005 | April 11 |
| 1966 | | 1986 | April 28 | | |
| 1967 | May 11 | 1987 | March 30 | | |
| 1968 | April 23 | 1988 | April 5 | | |
| 1969 | April 30 | 1989 | April 28 | | |
| 1970 | March 24 | 1990 | April 8 | | |
| 1971 | May 13 | 1991 | April 29 | | |
| 1972 | May 20 | 1992 | March 18 | | |
| 1973 | April 30 | 1993 | April 23 | | |
| 1974 | May 7 | 1994 | April 11 | | |
| 1975 | April 8 | 1995 | April 25 | | |
| 1976 | April 28 | 1996 | April 22 | | |
| 1977 | February 1 | 1997 | April 26 | | |
| 1978 | April 20 | 1998 | March 31 | | |
| 1979 | April 24 | 1999 | May 5 | | |

average for all years: April 18

Appendix 5. Monthly totals and daily counts of emigrant salmonids at Auke Creek, 2004.

| | pink salmon fry | coho salmon smolts | sockeye salmon smolts | chum salmon fry | Dolly Varden | cutthroat trout | steelhead trout |
|---|---|---|---|---|---|---|---|
| March | 5,967 | 0 | 0 | 15 | 8 | 0 | 0 |
| April | 81,838 | 99 | 27 | 65 | 2,204 | 72 | 0 |
| May | 123 | 3,891 | 7,580 | 104 | 1,327 | 58 | 12 |
| June | 0 | 328 | 906 | 7 | 5 | 3 | 0 |
| total | 87,928 | 4,318 | 8,513 | 191 | 3,544 | 133 | 12 |
| Mar. 1 | 35 | | | | | | |
| 2 | 42 | | | | | | |
| 3 | 111 | | | | | | |
| 4 | 79 | | | | | | |
| 5 | 59 | | | | | | |
| 6 | 38 | | | | | | |
| 7 | 71 | | | 1 | | | |
| 8 | 91 | | | | | | |
| 9 | 89 | | | | | | |
| 10 | 91 | | | 3 | | | |
| 11 | 194 | | | | | | |
| 12 | 136 | | | | | | |
| 13 | 119 | | | | 2 | | |
| 14 | 115 | | | | | | |
| 15 | 125 | | | | | | |
| 16 | 150 | | | 3 | | | |
| 17 | 125 | | | 1 | | | |
| 18 | 153 | | | 4 | | | |
| 19 | 111 | | | | | | |
| 20 | 139 | | | | | | |
| 21 | 98 | | | | | | |
| 22 | 166 | | | 3 | 1 | | |
| 23 | 270 | | | | | | |
| 24 | 273 | | | | | | |
| 25 | 281 | | | | | | |
| 26 | 243 | | | | 1 | | |
| 27 | 469 | | | | | | |
| 28 | 468 | | | | 1 | | |
| 29 | 526 | | | | | | |
| 30 | 501 | | | | 3 | | |
| 31 | 599 | | | | | | |
| Apr 1 | 648 | | | | | | |
| 2 | 610 | | | | 2 | | |
| 3 | 874 | | | | | | |
| 4 | 1425 | | | 1 | | | |
| 5 | 1326 | | | | 4 | | |
| 6 | 1851 | | | 1 | | | |
| 7 | 2213 | | | | 2 | | |
| 8 | 2829 | | | | 11 | | |
| 9 | 3463 | | | | 1 | | |
| 10 | 2107 | | | 1 | 1 | | |
| 11 | 5417 | | | 5 | 4 | | |
| 12 | 6364 | | | 4 | 11 | 1 | |
| 13 | 3941 | | | 3 | 4 | 1 | |
| 14 | 5838 | | | 5 | 4 | 2 | |
| 15 | 7395 | | | 3 | 33 | 1 | |
| 16 | 7185 | | | 3 | 28 | 2 | |
| 17 | 8955 | | | 5 | 20 | 1 | |
| 18 | 4959 | | | | 29 | 3 | |
| 19 | 4812 | | | 3 | 33 | 7 | |
| 20 | 3641 | | | | 19 | 1 | |
| 21 | 3145 | 3 | | | 51 | 10 | |
| 22 | 1429 | 1 | | 3 | 42 | 3 | |
| 23 | 239 | 4 | | | 36 | 2 | |
| 24 | 203 | 3 | 1 | 1 | 118 | 4 | |
| 25 | 119 | 4 | 1 | | 138 | 8 | |
| 26 | 98 | 7 | 1 | | 173 | 2 | |
| 27 | 234 | 11 | | | 579 | 8 | |

| | pink salmon fry | coho salmon smolts | sockeye salmon smolts | chum salmon fry | Dolly Varden | cutthroat trout | steelhead trout |
|---|---|---|---|---|---|---|---|
| Apr. 28 | 377 | 13 | 4 | 10 | 403 | 10 | |
| 29 | 112 | 21 | 12 | 13 | 258 | 3 | |
| 30 | 16 | 19 | 4 | 3 | 179 | 3 | |
| May 1 | 13 | 13 | 4 | 1 | 21 | | |
| 2 | 39 | 20 | 6 | 21 | 117 | 1 | |
| 3 | 21 | 15 | 6 | 6 | 57 | | |
| 4 | 14 | 43 | 6 | 12 | 104 | 2 | |
| 5 | 4 | 122 | 20 | 10 | 205 | 5 | 1 |
| 6 | | 92 | 75 | 10 | 325 | 4 | |
| 7 | 1 | 244 | 131 | 4 | 215 | 1 | |
| 8 | 1 | 209 | 206 | 3 | 61 | 4 | |
| 9 | 8 | 539 | 684 | 10 | 72 | 5 | 1 |
| 10 | 1 | 473 | 1445 | 5 | 28 | 5 | |
| 11 | 4 | 381 | 918 | 5 | 26 | 4 | 1 |
| 12 | 4 | 309 | 887 | 1 | 17 | 6 | 1 |
| 13 | 4 | 145 | 197 | 2 | 10 | 1 | |
| 14 | 6 | 161 | 228 | | 12 | 1 | |
| 15 | 1 | 162 | 483 | 1 | 10 | 2 | 2 |
| 16 | 4 | 134 | 243 | 1 | 18 | 4 | |
| 17 | 3 | 81 | 172 | 3 | 13 | 1 | 1 |
| 18 | | 139 | 174 | 2 | 13 | 3 | |
| 19 | 5 | 37 | 91 | 1 | 1 | 1 | 3 |
| 20 | 3 | 83 | 69 | 1 | 2 | 1 | 2 |
| 21 | | 53 | 70 | 1 | | 1 | |
| 22 | | 79 | 90 | 1 | 1 | 1 | |
| 23 | | 74 | 228 | | 6 | | |
| 24 | | 67 | 438 | 2 | 12 | 3 | |
| 25 | | 19 | 151 | | 1 | | |
| 26 | | 45 | 149 | | 1 | | |
| 27 | | 21 | 30 | | | 1 | |
| 28 | | 20 | 49 | 1 | | | |
| 29 | | 26 | 60 | 1 | | | |
| 30 | | 26 | 81 | | | 1 | |
| 31 | | 48 | 104 | | | | |
| June 1 | | 24 | 89 | | | | |
| 2 | | 17 | 151 | | | | |
| 3 | | 46 | 85 | | | | |
| 4 | | 15 | 91 | | | 1 | |
| 5 | | 64 | 162 | 3 | | | |
| 6 | | 77 | 158 | 1 | | | |
| 7 | | 46 | 95 | | 2 | | |
| 8 | | 28 | 26 | | | | |
| 9 | | 8 | 19 | 1 | 1 | | |
| 10 | | 1 | 10 | 1 | 1 | | |
| 11 | | | 12 | | | | |
| 12 | | 1 | 3 | | 1 | | |
| 13 | | 1 | 10 | | | | |
| 14 | | 1 | 2 | | | | |
| 15 | | | 11 | 1 | | 1 | |
| 16 | | | 1 | | | | |
| 17 | | | 2 | | | | |
| 18 | | 6 | 24 | | | | |
| 19 | | 1 | 4 | | | | |
| 20 | | 1 | 6 | | | | |
| 21 | | 1 | 2 | | | 1 | |
| 22 | | 4 | 7 | | | | |
| 23 | | 6 | 8 | | | | |
| 24 | | 2 | 4 | | | | |
| 25 | | | 4 | | | | |
| 26 | | 2 | 5 | | | | |
| 27 | | | 1 | | | | |
| 28 | | | 2 | | | | |
| 29 | | | | | | | |
| 30 | | | 1 | | | | |
| total | 87,928 | 4,318 | 8,513 | 191 | 3,544 | 133 | 12 |

Appendix 6. Monthly totals and daily counts of immigrant salmonids at Auke Creek, 2005. Hatchery reared chum and chinook salmon are included.

| | Sockeye salmon adults | Pink salmon adults | Chum salmon adults | Coho salmon adults | Chinook salmon adults | Dolly Varden | Cutthroat Trout | Steelhead Trout |
|---|---|---|---|---|---|---|---|---|
| June | 76 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| July | 2,465 | 522 | 427 | 0 | 5 | 494 | 1 | 1 |
| August | 336 | 8,350 | 514 | 0 | 127 | 543 | 1 | 0 |
| Sept. | 2 | 1,138 | 3 | 379 | 26 | 1,555 | 109 | 8 |
| Oct. | 0 | 0 | 0 | 91 | 0 | 274 | 34 | 12 |
| total | 2,879 | 10,010 | 944 | 450 | 158 | 2,795 | 138 | 20 |
| June 30 | 76 | | | | | 2 | | |
| July 1 | 5 | | | | | 2 | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | 22 | | | | | 1 | | |
| 6 | 2 | | | | | | | |
| 7 | | | | | | | | |
| 8 | 19 | | | | | 2 | | |
| 9 | 328 | | | | | 11 | | |
| 10 | 12 | | | | | 13 | | |
| 11 | 4 | | | | | 4 | | |
| 12 | | | | | | 12 | | 1 |
| 13 | | | | | | 8 | | |
| 14 | | | | | | 5 | | |
| 15 | | | | | | 1 | | |
| 16 | | | | | | | | |
| 17 | 548 | 3 | | | | 8 | | |
| 18 | 665 | | | | | 119 | | |
| 19 | 125 | | | | | 27 | | |
| 20 | 20 | | | | | 27 | | |
| 21 | 35 | | | | | 17 | | |
| 22 | 14 | | 3 | | | 12 | | |
| 23 | 117 | 1 | 9 | | | 20 | | |
| 24 | 72 | 1 | 15 | | | 11 | | |
| 25 | 50 | 2 | 27 | | | 18 | | |
| 26 | 23 | | 46 | | | 14 | | |
| 27 | 157 | | 162 | | 3 | 51 | | |
| 28 | 129 | 63 | 103 | | | 50 | | |
| 29 | 39 | 27 | 25 | | 2 | 35 | | |
| 30 | 30 | 110 | 9 | | | 16 | | |
| 31 | 49 | 315 | 28 | | | 10 | 1 | |
| Aug. 1 | 19 | 235 | 43 | | | 9 | | |
| 2 | 23 | 124 | 44 | | | 7 | | |
| 3 | 17 | 108 | 35 | | | 3 | | |
| 4 | 52 | 180 | 37 | | 2 | 6 | | |
| 5 | 53 | 831 | 57 | | | 23 | | |
| 6 | 31 | 664 | 42 | | | 19 | | |
| 7 | 18 | 339 | 41 | | | 30 | | |
| 8 | 7 | 222 | 35 | | | 12 | | |
| 9 | 7 | 60 | 8 | | | 5 | | |
| 10 | 7 | 32 | 3 | | | 4 | | |
| 11 | 4 | 38 | 5 | | 4 | 25 | | |
| 12 | 8 | 32 | 1 | | | 3 | | |
| 13 | 3 | 22 | | | | 5 | | |
| 14 | 5 | 61 | | | | 9 | | |
| 15 | 1 | 10 | 1 | | | 1 | | |
| 16 | 2 | 26 | | | | 2 | | |
| 17 | | 31 | 4 | | | 2 | | |
| 18 | 5 | 40 | 2 | | | 5 | | |
| 19 | 29 | 726 | 71 | | 7 | 65 | | |
| 20 | 13 | 623 | 34 | | 12 | 58 | | |
| 21 | 9 | 468 | 29 | | 14 | 44 | | |
| 22 | 6 | 446 | 10 | | 23 | 40 | 1 | |
| 23 | 6 | 423 | 2 | | 19 | 26 | | |

| | Sockeye salmon adults | Pink salmon adults | Chum salmon adults | Coho salmon adults | Chinook salmon adults | Dolly Varden | Cutthroat Trout | Steelhead Trout |
|---|---|---|---|---|---|---|---|---|
| Aug. 24 | 2 | 88 | 1 | | 5 | 13 | | |
| 25 | 5 | 121 | 1 | | 2 | 15 | | |
| 26 | 1 | 526 | 2 | | 1 | 25 | | |
| 27 | | 603 | 1 | | 22 | 16 | | |
| 28 | | 112 | 3 | | 8 | 12 | | |
| 29 | 1 | 122 | | | 4 | 13 | | |
| 30 | 1 | 385 | 1 | | 2 | 13 | | |
| 31 | 1 | 652 | 1 | | 2 | 33 | | |
| Sept. 1 | | 329 | | | 1 | 21 | | |
| 2 | | 165 | 1 | | 5 | 35 | | |
| 3 | | 59 | | | 4 | 14 | | |
| 4 | | 76 | 1 | | 3 | 38 | | |
| 5 | | 73 | | | 5 | 19 | | |
| 6 | | 53 | 1 | | 6 | 24 | | |
| 7 | 1 | 207 | | | 1 | 244 | | |
| 8 | | 79 | | | | 145 | | |
| 9 | | 20 | | | 1 | 71 | | |
| 10 | | 11 | | | | 42 | | |
| 11 | | 15 | | | | 20 | | |
| 12 | | 9 | | 18 | | 23 | | |
| 13 | | 5 | | 3 | | 23 | 2 | |
| 14 | | 7 | | 2 | | 23 | 4 | |
| 15 | | 11 | | 4 | | 32 | 10 | |
| 16 | | 8 | | 1 | | 48 | 6 | |
| 17 | | 6 | | 3 | | 32 | 7 | |
| 18 | 1 | 3 | | 41 | | 119 | 15 | |
| 19 | | 1 | | 114 | | 160 | 21 | |
| 20 | | | | 28 | | 92 | 7 | |
| 21 | | 1 | | 27 | | 42 | 6 | |
| 22 | | | | 15 | | 31 | 8 | 4 |
| 23 | | | | 13 | | 34 | 1 | |
| 24 | | | | 12 | | 12 | 3 | 1 |
| 25 | | | | 17 | | 53 | 7 | 1 |
| 26 | | | | 10 | | 15 | 2 | 1 |
| 27 | | | | 8 | | 10 | 0 | |
| 28 | | | | 26 | | 8 | 2 | |
| 29 | | | | 17 | | 52 | 1 | |
| 30 | | | | 20 | | 73 | 7 | 1 |
| Oct. 1 | | | | 12 | | 35 | 5 | |
| 2 | | | | 12 | | 20 | 7 | 1 |
| 3 | | | | 11 | | 23 | 4 | |
| 4 | | | | 3 | | 17 | 3 | |
| 5 | | | | 2 | | 10 | | |
| 6 | | | | 4 | | 9 | 1 | |
| 7 | | | | 3 | | 1 | 3 | 1 |
| 8 | | | | 5 | | 13 | | |
| 9 | | | | 4 | | | | |
| 10 | | | | 3 | | 10 | 1 | 4 |
| 11 | | | | 3 | | 3 | | 1 |
| 12 | | | | 5 | | 8 | 1 | |
| 13 | | | | | | 2 | 1 | 1 |
| 14 | | | | 1 | | | 1 | |
| 15 | | | | | | | | |
| 16 | | | | 1 | | 6 | | |
| 17 | | | | | | | | |
| 18 | | | | | | 3 | | |
| 19 | | | | 1 | | 15 | | 1 |
| 20 | | | | | | 6 | | |
| 21 | | | | | | 4 | | |
| 22 | | | | | | | | |
| 23 | | | | 1 | | 7 | | |
| 24 | | | | | | 6 | | |
| 25 | | | | | | | | |
| 26 | | | | | | 1 | | 1 |
| 27 | | | | | | 2 | | 1 |
| 28 | | | | | | | | |
| total | 2,879 | 10,010 | 944 | 450 | 158 | 2,795 | 138 | 20 |